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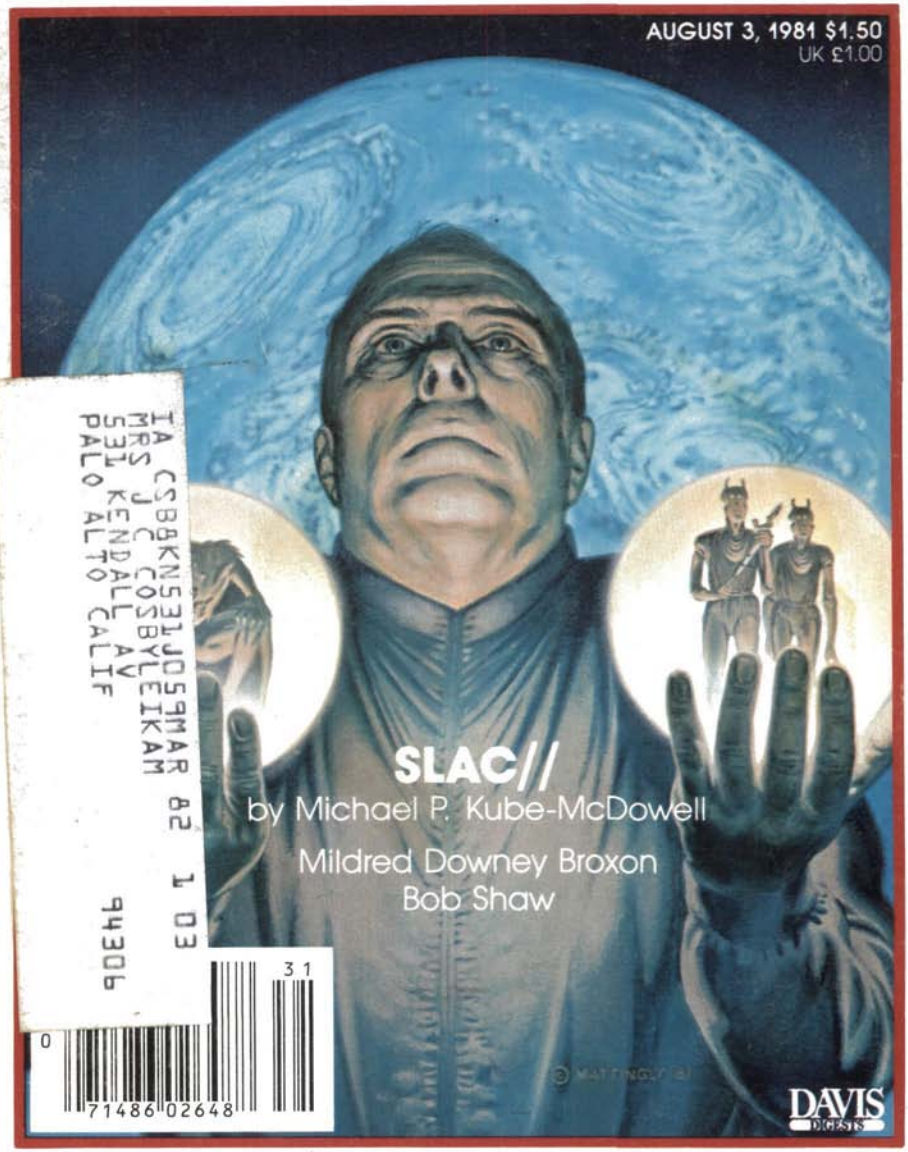

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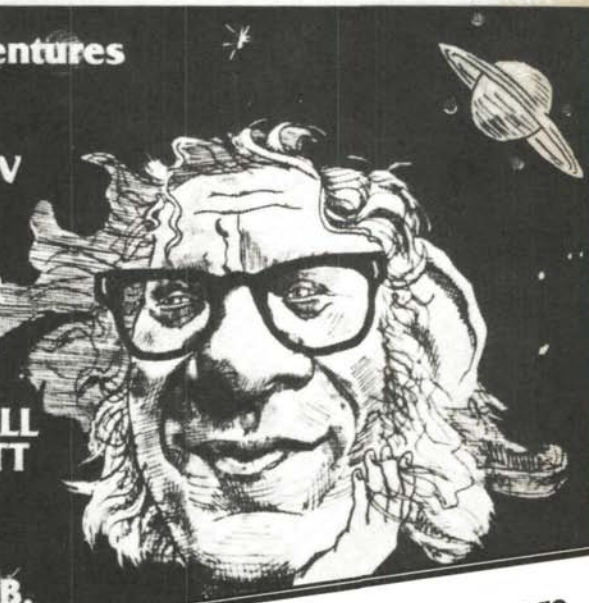

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EDITORIAL:
THE INFLUENCE OF SCIENCE FICTION

by Isaac Asimov

art: Frank Kelly Freas

I suppose it's only natural that those of us who are devotees of science fiction would like to find in it something more than a matter of idle amusement. It ought to have important significance.

On many occasions in the past I have advanced arguments for supposing such significance to exist. Here is how it goes.

The human way of life has always been subject to drastic and more or less irreversible change, usually (or, as I believe, always) mediated by some advance in science and/or technology. Thus, life is forever changed with the invention of fire—or the wheel—or agriculture—or metallurgy—or printing.

The rate of change has been continually increasing, too; for as these changes are introduced, they tend to increase the security of the human species and therefore increase its number, thus in turn increasing the number of those capable of conceiving, introducing, and developing additional advances in science and technology. Besides that, each advance serves as a base for further advance so that the effect is cumulative.

During the last two centuries, the rate of change has become so great as to be visible in the course of the individual lifetime. This has put a strain on the capacity of individuals, and societies, too, to adapt to such change, since the natural feeling always is that there should be no change. One is used to things as they are.

During the last thirty years, the rate of change has become so great as to induce a kind of social vertigo. There seems no way in which we can plan any longer, for plans become outdated as fast as they are implemented. By the time we recognize a problem, action must be taken at once; and by the time we take action, however quickly, it is too late; the problem has changed its nature and gotten away from us.

What makes it worse is that, in the course of scientific and tech-

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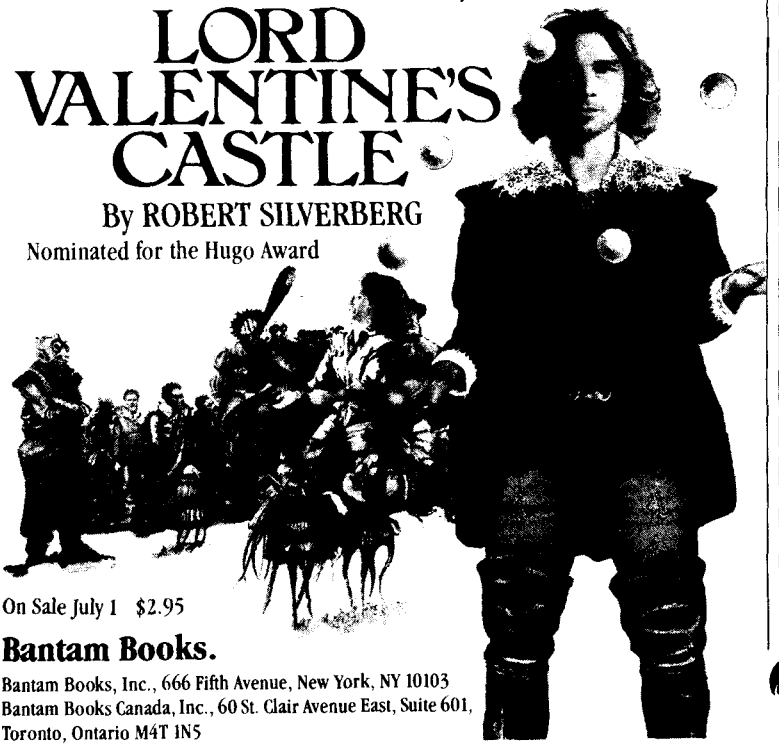

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nological advance we have reached the stage where we dispose of enough power to destroy civilization (if it is misused), or to advance it to unheard-of heights (if we use it correctly).

With stakes so high and the situation so vertiginous, what can we do?

We must learn to anticipate fairly correctly and, in making our plans, take into account not what now exists, but what is likely to exist five years hence—or ten—or twenty—whenever the solution is likely to come into effect.

But how can one take change into account correctly, when the vast mass of the population stolidly refuses to take into account the existence of any change at all? (Thus, most Americans, far from planning now for 1990, have shown by their recent actions that what they want is to see 1955 restored.)

That is where science fiction comes in. Science fiction is the one branch of literature that accepts the fact of change, the inevitability of change. Without the initial assumption that there will be change, there is no such thing as science fiction, for nothing is science fiction unless it includes events played out against a social or physical background significantly different from our own. It is science fiction at its best if the events described could not be played out at all *except* in a social or physical background significantly different from our own.

That doesn't mean that a science fiction story should be predictive, or that it should portray something that is going to happen, before it can be important. It doesn't even have to portray something that might conceivably happen.

The existence of change, the acceptance of change, is enough. People who read science fiction come, in time, to know that *things will be different.* Maybe better, maybe worse, but *different.* Maybe this way, maybe that way, but *different.*

If enough people read science fiction or are, at least, sufficiently influenced by people who read science fiction, enough of the population may come to accept change (even if only with resignation and grief) so that government leaders can plan for change in the hope of meeting something other than stolid resistance from the public. —And then, who knows, civilization might survive.

And yet this is highly tenuous; and while I accept the line of reasoning thoroughly (having, as far as I know, made it up), I can see that others might dismiss it as special pleading by someone who doesn't want the stuff he writes to be dismissed as just—stuff.

Well, then, has science fiction already influenced the world? Has

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anything that science fiction writers have written so influenced real scientists, or engineers, or politicians, or industrialists as to introduce important changes?

What about the case of space flight, of trips to the Moon?

This has been a staple of imaginative literature since Roman times; and both Jules Verne and H. G. Wells wrote highly popular stories about trips to the Moon in the 19th and early 20th century.

Certainly, those scientists and engineers who began to deal with rocketry realistically had read science fiction; and there is no question that men such as Robert Goddard and Werner von Braun had been exposed to such things.

This is not to say that science fiction taught them any rocketry. As a matter of fact, Wells used an anti-gravity device to get to the Moon, and Verne used a gigantic gun, and both of these devices can be dismissed out of hand as ways of reaching the Moon.

Nevertheless, they stirred the imagination, as did all the other science-fiction writers who flooded into the field as the 20th century wore on and who began to write material in large masses (if not always in high quality). All of this prepared the minds of more and more people for the notion of such trips.

It followed that when the time came that rockets were developed as war weapons during World War II, there were not lacking engineers who saw them as devices for scientific exploration, for orbital flights, for trips to the Moon and beyond. And all this would not be laughed out of court by the general public, all the way down to the rock-bottom of the average Congressman—because science fiction had paved the way.

Even this may not seem enough—too general—too broad.

How about specific influence? How about something a specific writer has done that has influenced a specific person in such a way that the world has been changed?

That has been done, too. Consider the Hungarian physicist, Leo Szilard, who—in the middle 1930s—began thinking of the possibility of a nuclear chain reaction that might produce a nuclear bomb, who recognized that his thought had become a very real possibility when uranium fission was discovered in 1939, who moved heaven and earth to persuade Allied scientists to censor themselves voluntarily in order to keep information from reaching the Nazi enemy, who persuaded Einstein to persuade President Roosevelt to initiate a vast project for developing a nuclear bomb.

We know how that changed the world (whether for better or for worse is beside the point right now, but I certainly would not have

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wanted Hitler to have gotten the first nuclear bomb in the early 1940s), so we can say that Leo Szilard changed it.

And how did Szilard come to have his original idea? According to Szilard himself, that idea came to him because he read a story by H. G. Wells (originally published in 1902) in which an "atomic bomb"—the phrase H. G. Wells himself used—had been featured.

Here's another case. At the present moment, industrial robots are appearing on the assembly line with increasing frequency. In Japan, whole factories are being roboticized. What's more, the robots themselves are being made more versatile, more capable, and more "intelligent" very rapidly. It isn't far-fetched to say that in a couple of decades this roboticization will be seen to have changed the face of society permanently (assuming that civilization continues to survive).

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Is there anyone we can credit for this? It is difficult to place that credit on a single pair of shoulders, but perhaps the pair that is most likely to deserve it belongs to a man named Joseph F. Engelberger, who is the president of Unimation, which manufactures one-third of all the robots in use and has installed more of them than anybody else.

Engelberger founded his company in the late 1950s, and how do you suppose he came to found it?

Some years before, according to his own account, when he was still a college undergraduate, he became enthusiastic about the possibility of robots when he read *I, Robot* by Isaac Asimov.

I assure you that when I was writing my positronic robot stories back in the 1940s, my intentions were clear and simple. I just wanted to write some stories, sell them to a magazine, make a little money to pay my college tuition, and see my name in print. If I had been writing anything but science fiction, that's all that would have happened.

But I was writing science fiction—so I'm now changing the world.

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ON BOOKS
by Baird Searles

Windhaven by George R.R. Martin and Lisa Tuttle, Timescape Books, $12.95.
The Sunset Warrior, Shallows of Night, and *Dai-San*, by Eric Van Lustbader, Berkley, $2.50 each (paper).
A Treasury of Modern Fantasy edited by Terry Carr and Martin Harry Greenberg, Avon, $8.95 (paper).
Companion to Narnia by Paul F. Ford, Harper & Row, $12.95.

This column will be a bit shorter and maybe a bit more scatterbrained than usual, since, due to circumstances beyond anyone's control, my deadline was rather suddenly moved up just as I was racing another deadline for a book. But fear not, faithful readers, in an issue or two I'll be back to my long-winded self.

At least I can start off on a positive note with *Windhaven* by Lisa Tuttle and George R.R. Martin (I've never understood why SF authors were so prone to middle initials anyway, but a double one is really ostentatious). It's a nice book, and rather a quiet one with no melodrama and the major action being man against weather.

It's also a well-done example of the sort of SF written around a world with some sort of radical difference from Earth and the sort of human society that might grow from that difference. On the planet Windhaven, the only land area is made up of small islands; its gravity is also lighter than Earth's.

Long before the period in which the novel is set, a starship with human colonists aboard has crashed on Windhaven. A fairly primitive (physically) but still quite civilized culture has grown up from the survivors; the elite of this culture are the flyers: men and women who fly the long distances between the islands on huge wings made from the indestructible cloth that the wrecked starship had used (with the solar winds, presumably). The fliers are a practically sacrosanct caste since they represent the major form of communication between the islands, the seas being just barely navigable. The precious wings that make flying possible are inherited, and their number is obviously finite, given the source, and it dwindles due to the attrition of accidents and lost flyers.

The novel (really three linked novelettes, two of which have appeared in *Analog*) concerns the life of a female flyer, Maris. She is not of a flyer family and has won her wings only as an adopted child;

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when a late baby is born to her foster parents, she must relinquish her wings when the child comes of age.

He, however, grows up to care little for flying, and Maris, to keep the wings, literally flies in the face of convention and law.

Telling how this is resolved would be giving it away, but the second section of the book takes place seven years later, and deals with some of the ramifications of that resolution; the third section is many years later than that, as the results of Maris's rebellion are affecting the entire society.

I don't think *Windhaven* will exactly become a classic in the field, but it's appealingly conceived and very nicely written, with the exception of perhaps a bit too much deliberate sentiment. I'm not against sentiment, but it easily can become forced, and that shows here now and then.

No problem with that in Eric Van Lustbader's Sunset Warrior trilogy. There's not an iota of sentiment, or for that matter, feeling, in it.

As so often happens, these books caused barely a ripple when published in hardcover, but have found their place and popularity as paperbacks. I've noted that tackling a trilogy, particularly after the fact, rather than with the first in the series, is a gamble for a reviewer. That's a lot of time invested, and for that it had better be good.

I'm afraid I lost this gamble. The trilogy is laid in a far future, post-some-sort-of-holocaust, and for the first volume we are led to believe that all of mankind that survives lives in an underground redoubt. Its culture has apparently been dominated by the Japanese, since many of the names and much of the society relates to our clock-radio-making friends to the East. This book might be described as Bunraku Baroque (Bunraku is a sort of Japanese theater played by life-size puppets; need I say more about Van Lustbader's characters?). Once our hero escapes the redoubt, he discovers that the surface is inhabited; after that, there's much to and froing, on land, sea, and ice; messy monsters from here, there, and other dimensions; warriors and beautiful women (all of whom I envisioned looking like Anna May Wong); and battles, battles, battles! The author seems to be of the school that a book without a full-scale bloody brouhaha every 20 pages is no book at all; at one point all of 40 pages goes by without any gore and I was afraid I had picked up the wrong volume.

So far as I'm concerned, Michael Moorcock did all of this ten years ago, and did it better.

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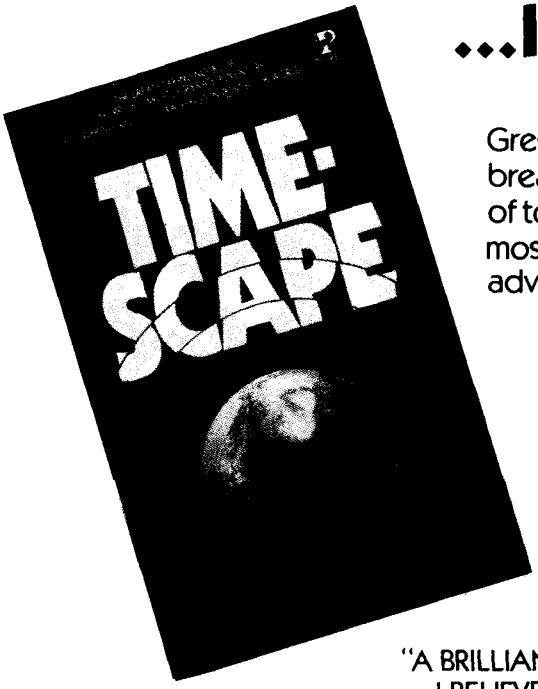

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Two additional notes: though the books are clearly characterized as a trilogy, there is a fourth available in hardcover; the title is *Beneath an Opal Moon* and tackling it is above and beyond the call of duty. And the covers on the paperbacks by Don Maitz are extraordinarily handsome.

In the past, there have been near-definitive anthologies of science fiction (*Adventures in Time and Space* for the earlier period, *Dangerous Visions* for the later), and stories of the supernatural (*Great Tales of Terror and the Supernatural*), but not for that elusive in-between, pure fantasy. Now there is *A Treasury of Modern Fantasy*, edited by the indefatigable Terry Carr and Martin Harry Greenberg, and it just might fill the gap.

There are 33 stories included, and I have no serious quarrel with the choice of any of them. Well, maybe one. H.P. Lovecraft is represented by the well-known "The Rats in the Walls," which is perhaps too typical of his horror tales (it is in the abovementioned *Great Tales of Terror and the Supernatural*, in fact). Something like "The Outsider" might have been more characteristic of HPL as fantasist.

That's a mere cavil, though; otherwise, I was very happy to see, for instance, Merritt's beautiful "The Woman of the Wood" about beings that might be dryads; one each from that literary marriage made in heaven, Henry Kuttner and C.L. Moore (Kuttner's is "Call Him Demon" in which a group of children play Oz and Jungle Books with something nasty and very carnivorous in the attic, and Moore's is another evocation of mythology in the modern world, "Daemon"); and Heinlein's (bet you didn't expect to find *him* here!) "Our Fair City," which concerns a pet whirlwind.

Others of the Greats represented are Bradbury, Brown, Sturgeon, and Leiber; among the younger generation, Russ, Disch and Bishop. It's a most satisfying collection, and I particularly congratulate the editors on the restraint used in the introductions to the stories; they are informative, but wonderfully, blessedly succinct.

In the couple of days I take for a breather between columns, I actually get to read or reread books for myself, a great luxury. This last time (not knowing of the crunch ahead), I went back to Naomi Mitchison's incredibly good Arthurian fantasy, *To the Chapel Perilous*, where she meets T.H. White on his own ground and, in my opinion, wins. It's a book I'd love to review, but so far as I know, it has never been published in the U.S., which I find unbelievable. But at least I got to sneak in a reference, and even a relevant one in a

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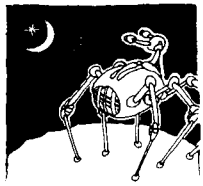
forced kind of way, since a lion in that novel started me thinking about Narnia, which led me back to the series by C.S. Lewis and, by golly, what should appear as I was in the middle of it but a *Companion To Narnia* by Paul F. Ford.

The seven books devoted to the magic other world of Narnia are precious to many people, and come close to rivalling Middle Earth as a place to start on fantasy. I, myself, am not such an aficionado, mainly because of the heavy Christian allegorical significance that Lewis has injected. Christianity is a very good religion, but I prefer not having it mixed up with my fantasy, no matter how charmingly done. (Nevertheless, I do go back to them periodically.)

There's the problem, I'm afraid, with this *Companion*. It's very like those various guides to Middle Earth that have appeared, but for one thing, the Narnia stories are a lot more simplistic and less densely structured than Tolkien's. This plus the allegorical content leads to a great deal of interpretation and entries on such things as "Death" and "Smells" as well as people, places, and things directly concerned with Narnia itself. Despite this, the devout Narnian will find much of interest here, particularly if he or she is intrigued by Lewis's deeper meanings.

I might add that the *Companion* has illustrations I have not seen before, by Lorinda Bryan Cauley. They are as cute as the original illustrations to the Narnia books, by Pauline Baynes, are bland. Some day I would like to see an edition of the series with pictures worthy of its many finer moments.



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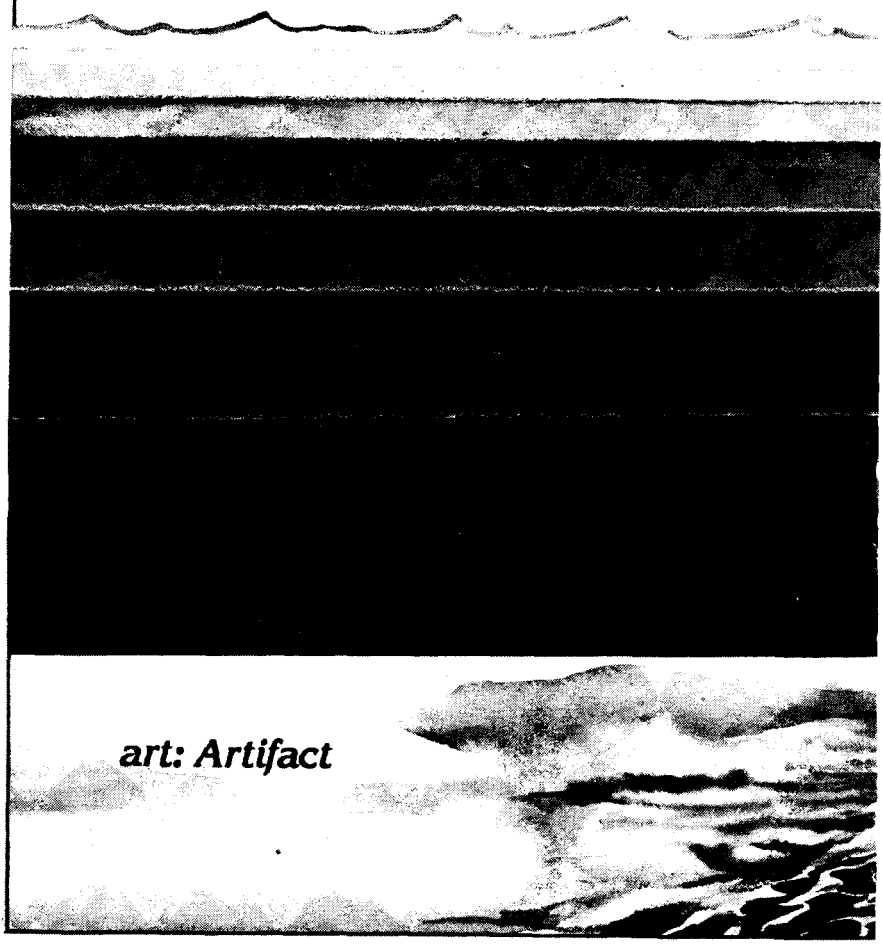
SEA CHANGELING

by Mildred Downey Broxon



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Mildred Downey (Bubbles) Broxon was born in Georgia and raised in Rio de Janeiro. She now lives on a houseboat in Seattle with her husband Bill, a black cat, and two huge boa constrictors. The boas recently presented her with 34 infant snakes. Before becoming a writer, she worked as a psychiatric nurse in the violent ward. Her novel Too Long a Sacrifice *was just published by Dell.*

Before his birth, drifting in his mother's womb, he knew the shape of the tank that held her. In it swam two others. They were dolphins, though he did not know the human word.

He had yet to draw his first breath, and thus could not shift air inside his head to speak; but he could hear. With delphic sonar he "saw" whether his mother had recently fed, and if the other two creatures were excited or angry. He even knew something of the strange ones who scrambled on the sides of the tank and, occasionally, swam with the sea-folk.

Later he tried to explain this, but human language contained mostly visual terms. No one understood. Even to him the world of sound was a haunting memory.

The Walker Institute of Neurological Research is located on private land in southwestern Arizona, far removed from any population center. Staff are employed on a live-in basis and housed in cottages or dormitory facilities on the grounds.

The Institute's interest in the field of neurological research is wide-ranging, and includes both pure research and the pioneering of therapeutic techniques. Privately funded by a bequest from the late Frederick Walker, and directed by his grandson John Walker, M.D., the Institute depends on no federal or other public moneys. Interested qualified personnel (professional and technical) may obtain our employment brochure by writing . . .

Cold water shocked his skin, tail first; then, with one mighty contraction, he was born. Light shattered, and he thrashed. His mother nudged him to the surface. Air struck his blowhole. He breathed, then breathed again. The cavities in his head filled. He whistled, and his mother's voice answered. He spread his flippers

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and thrust with his flukes; he dove, spinning out of control. Again his mother nudged him to the surface. Gradually he calmed, learned how to balance and turn; he learned, too, how to bounce his own location signals off the side of the tank, off his mother, and off the other two dolphins who kept a respectful, but interested, vigil.

He took joy in motion. A leap crashed him back into water. He squealed with pleasure at the splash. Soon he began to nurse, surfacing often; his mother kept up a steady, reassuring series of clicks. She hovered between him and their companions.

He was trying to coordinate his visual images with what he knew already from sonar, when nets hissed into the water and his mother screamed.

FROM THE CONFIDENTIAL JOURNAL OF MEDA JOHNSON, M.D., FELLOW OF THE WALKER INSTITUTE OF NEUROLOGY:

Healthy male specimen of Tursiops truncatus *born today in dolphin holding tank. Reflexes and behavior normal. The surgical team has assembled; we will prepare the donor and Daniel. We operate tomorrow. My hopes for the new technique are high. A newborn donor will have learned very little dolphin behavior, and the new transplant procedure should eliminate the delphic reflexes.*

She leaned back from the keyboard. The display glowed green; she frowned at her reflection in the plastic. Her fingers drummed. The recipient, after all, shouldn't be thought of as "Daniel"; he was merely a living, breathing brain-stem preparation. Years ago the unremitting pressure of hydrocephalus had wiped out his cerebrum, and with it his personality.

She winced and held her hand, briefly, to her left temple. This was no time to have a headache. She coded her journal for storage and keyed a neurophysiology publication. Another review of the literature couldn't hurt.

Lights gleamed off stainless steel. Stretched on the gurney, the patient measured six and a half feet tall. His body was well proportioned, as one might expect from years of automated physical therapy. He was ready, now; the technician finished shaving his oddly shaped head.

Dr. Johnson looked down at the scars that seamed scalp and neck, tracks of a lifetime of failed surgeries. Nothing, it seemed, could halt the steady buildup of cerebrospinal fluid; at last the damage was so great that there was nothing to salvage but the body. Daniel had become what the medical profession called—among them-

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selves—a "vegetable." But yet he breathed, and his internal organs functioned. Modern care maintained him in perfect, mindless health.

Now, at last, he had a use. Dr. Johnson had already sprayed on her gloves, so she did not touch his cheek. "Goodbye, Danny," she whispered.

The technician daubed the scalp with orange fluid as the rest of the surgical team filed into the room. Dr. Walker, head of the Institute, nodded to Dr. Johnson as a nurse tied his gown. "Well, Meda," he said, "let's get on with this project of yours." He frowned. "I don't think it's going to work any better than before, but you may as well try."

Dr. Johnson pressed her lips together. That Walker bastard was so self-assured! She'd show him—she'd wait until she had an unquestionable success, and *then* make her report.

She picked up a scalpel and began the scalp incision.

FROM THE CONFIDENTIAL JOURNAL OF MEDA JOHNSON, M.D.:

The cerebral transplant was successfully completed. As planned, we grafted the newborn dolphin cerebrum to the human brain at the level of the pons, in order to minimize difficulties previously encountered. Human reflexes were needed to operate a human body. Not only had dolphins long ago abandoned the use of limbs, but, as sea mammals, they had voluntary control over respiration. The first two transplant cases had, quite simply, committed suicide by refusing to breathe.

In a few years the dolphin brain will grow beyond the capacity of a normal adult human skull. Thus, as usual, a hydrocephalic subject was chosen. Since the dolphin donor was newborn, he will have no learned dolphin behavior. Surgical shock and prolonged recovery time should ensure complete amnesia for the procedure. The third subject, who'd been given an adult dolphin cortex grafted to a human brainstem, drooled and stared. No therapy could reach her. Catatonic, she was as useless as she'd been before surgery, when she'd lain in the profoundly-retarded ward. At least she now had better physical care.

It was a shame she couldn't publish her studies, Meda Johnson mused. Some day—but at present the work at the Walker Institute was secret. Even so, if word on some of the experiments got out, there were always meddlers ready to regulate scientific inquiry.

Numerous thorny legal problems surrounded the use of human subjects, but legalities were not her worry. Her area was research. She continued her journal: *The dolphin cerebrum, optic, and cranial*

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nerves were grafted. The surfaces were treated with a 9% solution of Neurostim. As the olfactory nerve is not present in Tursiops truncatus, *the patient will have no sense of smell.*

When grafting was complete, the cranial vault was replaced and sealed with bone cement. Following normal procedure, the patient's immune system was stimulated, and anti-delphic antibodies were selectively neutralized. That was all. The rest of the immune system was unharmed. Transplant patients no longer needed to be kept in a germ-free environment while their body defenses were repressed. Early transplant surgery had, she felt, taken place under truly medieval conditions.

She then keyed for the DOCTOR'S PROGRESS NOTES, and continued, for the benefit of the staff: *The patient, still comatose, is on full support in the intensive care unit. When his vital signs stabilize we plan his transfer to a sensory-deprivation tank.* M. JOHNSON, M.D. She leaned back from the keyboard and stretched. I know Walker didn't want me on this case, she told herself, but it's my special field. I can handle it. It's all a matter of professional detachment.

He woke in darkness. Sounds were muffled, a far-off murmur of waves on ancient beaches. Water slid soft tides across his skin. He drowsed. Why had he felt he must surface to breathe? Here air filled his lungs as needed. Something had changed, but he was numb, and could not think.

Time flowed unmarked. In his dreams, tiny four-footed beasts scurried over land, cowered at the edge of ocean, paddled a distance into the surf—and in their millions, down the years they died. Their shapes changed, but the new ones died as well, prey to sharks, drowning, illness, and, finally, age.

As he dreamed, nerve-endings knit, insulating sheaths covered their trunks, and bone-lattice grew solid.

DOCTOR'S PROGRESS NOTES: *Day 30 postsurgical. Patient has been maintained in sensory deprivation tank. His electroencephalogram, initially shock-flat*—Dr. Johnson paused, and recalled that Danny's EEG had been flat for years—*now shows evidence of cerebral activity. We are cautiously optimistic.*

Neural and bone regeneration should be nearly complete. After transfer from deprivation tank to normal room, we can institute Phase II: gradual introduction of stimuli, accompanied by observation and testing.

The patient will remain on total monitoring, and will require

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round-the-clock technical care. M. JOHNSON, M.D.

Light seared through his eyelids, and something rubbed rough against his skin. Sand? He must be beached.

Millennia of horror surged through him. He did not want to die! But he was heavy, he was out of the water—and what was that noise? The roar of surf, the chatter of scavenger gulls? He flung back his head to breathe, and met resistance. *Try to dive.* He flailed his flippers, thrust his flukes, to sink into cool, safe depths. Pain shattered like winter ice. His body went rigid. He opened his eyes.

Shapes blurred. He could not sort the images. Why was he on his back? He held his breath and willed himself to die.

His chest burned, his heart pounded, and, whether he wished it or no, he gasped for air. A shape bent over him, and something sharp stung his flipper. Silence and peace swept in like friendly seas.

FROM THE CONFIDENTIAL JOURNAL OF MEDA JOHNSON, M.D.:

The initial attempt to introduce stimuli proved almost as unsatisfactory as Dr. Walker's earlier efforts to communicate with unaltered dolphins. The patient became agitated and, in thrashing, fractured his left and right fibulae. He also incurred severe bruises on his lower arms. He must be restrained in future to avoid injuring himself on the bedrails. He is, after all, not accustomed to his present body. The breath-holding maneuver was observed, but our retention of the human brain at and below the pontine level has made this delphic suicide reflex impossible. Patient seems to suffer a phobic reaction at being out of water; if so, this has interesting implications, as he could not have learned such a fear during the short time—less than a day—he lived as a dolphin. Can this be instinct?

At any rate, whether or not he is emotionally stable, his motor and sensory apparatus seem to be functional. Prior to his full awakening this was uncertain.

Dr. Johnson keyed "record" and proceeded to enter instructions on the open chart: DOCTOR'S ORDERS AND PROGRESS NOTES: *Patient sedated, fractures set, returned to sensory-deprivation tank for recovery. Recommend gradual reduction of sedation, combined with full restraints, when next he is transferred to standard room.* She paused and thought a moment. Reduction of unnecessary stimuli—that was it. She added:

Human contact should be limited to one staff member only. Routine monitoring duties may be carried out by assistants, but the primary-care person should be the only one to actually enter the room. This

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will, of course, necessitate an on-call status 24 hours a day. This staff member should be specially recruited and have no other duties. M. JOHNSON, M.D.

Linda Rios was surprised at the query from the Walker Institute. She'd just graduated, with honors, from an Intensive Care Tech training course, and had thought to find work in some large hospital. Patient care in neurological research? That's what the letter said. Very well. It wasn't what she'd expected, but if they needed someone who could use, adjust, and interpret the machines that lived *for* people—why not? No matter that she'd be on call 24 hours a day. The job paid very well, and surely her patient would recover in a few months.

When she arrived at the Institute—miles from any settlement—and checked the chart, she was surprised how little information it contained. It only told her that the patient had undergone massive brain surgery. As common in such cases, he was disoriented, amnesic, and would eventually need complete retraining.

Probably a double-blind experiment, she reasoned. They wanted her observations and evaluations, unaffected by the patient's past history. It was standard experimental technique.

At present his orders prescribed a minimum of stimuli and no visitors. She was to be his only human contact; even the medical staff observed him on screens, though they often summoned her to conference.

Even though Daniel lay unconscious, Linda realized he might be able to hear, so she talked to him. She preferred people to machines.

If he was aware at all, how lonely he must be in his darkness! She ran a practiced eye over the readouts. "You're doing fine, Danny." ("Mr. Johnson" sounded too formal.) "It's time to eat. One of these days they'll put you back on real food." She poured mush into the mechanical feeder, lubricated and inserted the nasogastric tube. Good; he didn't gag. "At least it keeps you healthy. What did you like to eat before you got sick?"

He was only about her age, perhaps a bit younger; whatever his illness, it must have come on suddenly. He had that oddly bulging head, though, and old and new scars gleamed through the hair. Whatever his condition, his treatment, she knew, was highly experimental.

As the feeder began to hum, he opened his eyes, but did not seem to focus on anything. "Hello, Danny," she said, bending over the bed. "I'm Linda." He closed his eyes again. She frowned and checked

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his medication drip; yes, they were reducing his sedation. *I wonder what sort of person he is when he's conscious?*

On the wall behind the bed a red light flashed. Someone outside wanted to talk to her. "I'll be right back, Danny," she said. There was no answer.

She stepped out and saw the slight gray woman; always before she'd hovered at the back of the group, but today she came alone.

"How is he tolerating the lowered sedation?"

Before answering, Linda checked the name-badge. MEDA JOHNSON, M.D. She frowned. *Johnson?* "Oh." Then, recovering, "He seems a bit more alert. He opened his eyes; he hasn't tried to speak," (The doctor's mouth twisted.) "but I think he's listening."

"Very well." The physician turned to go.

"Just a moment, Dr. Johnson—" the older woman turned back. "I couldn't help noticing—it's a common name, of course—" The question hung unfinished.

The woman's face was stone. Her words fell slow and precise. "Yes, since you ask, Daniel Johnson is my son. Good day."

For a long time only dreams were real. He was stranded, sand and rock ripped his skin; he was beached, unable to move—then he would surface, gasping, into a far worse world. Bright light poured down, noises muttered, and there was something wrong with his hearing. His eyes sent strange signals, vivid and frightening.

When he twisted to escape, he was held rigid. At last the worst of his panic left him, and, as he grew less drowsy, he could interpret visual messages, distorted though things were. But he could not properly hear or echolocate.

The creature who shared his living space did not threaten; she bent over him and made meaningless, soothing sounds. And, as he dreamed less, she tried even harder to communicate.

There she was again. She touched his chest. "Dan-ny, Dan-ny." Whatever that sound meant. He tried to send a reply of clicks and whistles, but his voice would not work. He could only grunt low in his throat, a sound that conveyed nothing and was pitched far too deep. He tried again, but the shape of his head felt wrong: he could not focus sound. Everything had changed, and he hurt. This time he made only a mindless whimper.

Linda Rios gazed down at her patient. So this tall, strong-looking young man was aphasic: locked in his own skull, unable to speak. It happened to so many neurological cases.

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She shuddered. She'd had an aphasic patient once, when she was in training. He had various medical problems, which was why he was on monitors; he'd been brain-damaged in a space-shuttle crash. The pilot and other passengers had died instantly. They were the lucky ones. Her patient lived, but parts of his brain were scrambled. He could no longer draw meaning from a jumble of words, nor produce more than random jabbering.

It was not surprising that other, busier staff regarded him as less than human. But Linda saw his shame and anguish, and worked with him all that semester while she tended his machines.

The day he could say his own name, he wept. By the time she left he could—with effort—request water, pain medication, and the urinal.

Before the accident he'd been a famous journalist.

From that time on, Linda had an interest in aphasics. "Dan-ny," she repeated, over and over. "Dan-ny."

Yet the day Danny repeated his name, it was Linda who blinked back tears. She blew her nose, pointed at herself, and said "Lin-da." That idea he caught almost at once.

So there *was* a mind in that distorted skull. His tongue seemed stiff, and his voice was a harsh croak, as if he'd never used it in all his life.

Now his gaze followed her as she bustled about the room. He was still strapped to the bed; she eyed the restraints with hatred. Why did they keep him trussed up like an animal? She should have a word with the medical staff—especially that woman who claimed to be his mother.

Meantime, though, she picked up a pitcher from the side table and poured the contents into a glass. "Wa-ter," she said. "Wa-ter."

Danny looked at it, his gaze unusually intent.

DOCTOR'S PROGRESS NOTES: *Time elapsed since surgery: eight months. The patient has developed a rudimentary five-word English vocabulary, due mostly to the teaching efforts of his intensive-care technician. He still uses no verbs and has, in fact, no concept of grammar. Recommendations: enter Phase III. Move to regular isolation room. Begin normal feedings, encourage ambulation (this may be tricky) and initiate formal speech and physical therapy.* MEDA JOHNSON, M.D.

Dr. Johnson thought a moment, then keyed her own log: CONFIDENTIAL JOURNAL OF MEDA JOHNSON, M.D.:

It is impossible, as yet, to quantify the patient's intelligence. As regards vocabulary, chimpanzees have done as well, though they lack

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the human capacity to vocalize. Because of the utterly different sound-producing apparatus of the dolphin, research in this area has been inconclusive. Even Dr. Walker's attempts to communicate with the dolphins via a sound-transmuter that mimicked their own language came to nothing—the physiology and psychology of our two species are alien. This is one reason for my own rather daring experiments.

The technician, unaware of the patient's true history, professes herself puzzled by his long recovery time. She insists that he is intelligent and aware, but she has become over-involved in the case. As we move now to Phase III, her employment may safely be terminated, and controlled evaluation begun.

Dr. Johnson gritted her teeth. Involvements, always involvements; humans were so difficult! She keyed the log and reminded herself to take her headache medication.

Linda strove to keep her voice bright. "They're moving you out of intensive care, Danny," she said, "so you don't need an intensive-care technician any more. I'll be leaving, and you'll have other people to look after you."

Danny now lay unrestrained save for a leather belt about his waist; this was, she supposed, to keep him from climbing out of bed, though he'd never shown any inclination to do so. And his arms and legs were still held stiff and extended. There was no neurological damage, she knew; the nerve-stimulators showed that, in the exercise sessions. But he seemed not to know what limbs were *for*. He never reached out for anything, though even young babies did. Instead, if necessary, he would try to grasp objects in his mouth.

Whatever had happened to him, at last he was graduating from intensive care. That, after all, was what she'd worked for, why she'd been hired. Still, he was the strangest case she'd ever seen.

She reached out to pat him on the brow. She'd trimmed his hair, which was now long enough to cover the shiny scars. She tousled it, as one would do to a child.

He turned his head, then raised one hand—slowly, so slowly—and, after several tries, touched her wrist. His fingers and thumb stayed together, as if he wore mittens, but he *had* reached out.

His face held no expression—it never did—but his eyes looked worried. "That's right, Danny," she said. She swallowed. "You're beginning to remember. You're supposed to pick things up with your hands. They'll be teaching you about that, now, and you'll learn new words. . . ." Her voice trailed off. "I have to go, Danny. Good-bye."

He blinked. His face stayed calm.

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He watched her walk out the door. "Good-bye" was a word he did not know. Linda always came back. And of late he could call her name. Meanwhile, he held his right hand in front of his face. He flexed it, and the fingers separated. Amazed, he spread them further and wiggled them.

After some while he found he could touch each in turn to his thumb. This took concentration. And didn't he have a hand on the other side, too? He raised it; those fingers didn't work as well. He touched the two sets together and watched as they formed and broke an arch.

Hands. He had hands like Linda's! He'd seen her move things about. It was quicker than—than what? Mouth-grasping? Why did he think of that?

The steel bedrail gleamed beside him. He closed his right palm about it and shook. It chattered. This was something to share! "Linda." No reply. He waited; he could be patient. "Lin-da."

When the stranger came in he flinched and lay rigid. He remembered her from long ago, back when he had been so frightened. He tried to hold his breath and die, but again his body betrayed him.

"Danny?" The voice was harsh, and he scarcely recognized the noise that meant him.

He closed his eyes. He tried to sound out this stranger, learn what she wanted from him, but part of him was missing; he could not produce the frequencies he needed. He could only squeal and babble, low in his throat. The faint echoes that rang off walls and equipment told him nothing.

He heard her step closer. Panic swept over him, and he flailed, forgetting the length of his arms. His fist struck soft flesh; he heard a cry, and the woman backed out of reach. He opened his eyes, the only way, now, he could tell what had happened.

The stranger held one hand over her mouth. Blood gushed between her fingers.

Three other strangers burst into the room. Two of them held him down, though he snapped and struggled. Straps bit his wrists and ankles, and a needle stabbed deep. Blackness swallowed him.

DOCTOR'S PROGRESS NOTES: *The patient has recovered well physically from his surgery, but psychologically he shows very poor social adjustment. Plan: transfer to normal isolation unit and expose to a variety of personnel, professional and technical. He must adjust to the presence of strangers before further progress is possible. I recommend the selective use of operant conditioning and tranquilizing*

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medication to further his cooperation. M. JOHNSON M.D.

The time that followed was brutal. Danny was moved to a larger room, one with less equipment, and was allowed out of bed, though he was clumsy and often fell. Soon he learned that if he struck someone he received a painful electric shock; if he was stubborn and withdrawn he would not be fed.

He would have died if he had known how. As it was, he tried refusing all food. Some of his new companions, though, were kindly, and talked to him as Linda had done. He had no wish to grieve them, so at last he ate again. The taste of food—after months of tube-feeding—was strange and not altogether pleasant; he had trouble conveying it to his mouth with his hands, and when they insisted he use instruments for the purpose he dropped them or flung them across the room. The shocks soon made him stop that, as well.

One big man, who called himself Frank, seemed to know how difficult everything was. He coaxed and showed how and tried to explain; day by day Danny grew more coordinated, and learned more human words.

Walking: he tottered on stalklike legs and clumsy feet, and was black with bruises where he'd fallen. *Bladder and bowel control:* for millions of years, free in the ocean, his ancestors had never faced this problem. When Danny understood his task, he struggled, and eventually won. Anything to stop the shocks. *Clothing:* again, a strange idea. But everyone here wore it. His fingers despaired of mastering buttons, zippers, and knots.

And yet, over the months, he learned. And learned. And, at times, lay on the floor wishing he were dead, beached, drowned, with gulls pecking out his eyes. In dreams he floated.

His speech therapist, Anna, brought him an old television set (suitably shielded against tantrums) and he watched the flickering picture, fascinated. Somehow the absence of color seemed *right.* Eventually the old set was turned in on a color holo; these three-dimensional figures were easier to interpret, but colors seemed wrong, jarring.

Watching the holo—tuned to the educational channel—Danny began to form the idea that some shapes stood for words. The purely human concept awed him, for all he thought it useless. Why make a record of information? Records could be lost. It was much easier simply to remember everything. He had no trouble doing that, at least once he understood an idea. It was understanding that took time.

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Frank and Anna sat over coffee in the staff cafeteria. Anna set down her cup and sighed. "I don't know. I've never seen a case like his. He's not stupid, that's easy to see."

Frank nodded. "I used to think he was just another of those big-headed kids—hy-dro-cephalics—we used to get at the State School. Couldn't do a thing with 'em, they wouldn't grow up much, in cribs all the time. Maybe that's why I was so patient with him at first. Didn't think he was playing with a full deck. Surprised to see him learn anything at all."

"That's the trouble," Anna said, "as you put it, he's *not* playing with a full deck. But the pattern is weird. I've never seen such a combination of amnesia and disability—and yet he can learn."

"He's just like a little kid," Frank said, "only worse. Until he catches on to something. What do you suppose happened to him? He's still got a big head, but he can get around . . . never saw anything like that before."

Anna grinned. "Well, the chart won't tell us much. Experimental case; sure, let the staff work in the dark, who cares?"

Frank sipped his coffee. "Well, whatever he had, it can't help him much being cooped up in that damn room all day. Make anyone crazy. He oughta get out a little bit. Hasn't even got anything to read. Can't read anyhow. Watching the damn holo would drive you to drink." He set down his cup. "Hasn't got anything to drink, either, for that matter. What a life!"

"Well," Anna said, "I wouldn't suggest inviting him over for a beer, but I don't see why we couldn't let him have some fresh air. I'll take him out during the therapy session this afternoon." She thought a bit. "You'd better come along, though. He likes me; and he hasn't been violent for a long time, but all the same, if anything happened—"

"Yeah," Frank said, "it would be both our ass. At least. Two o'clock, then?" He scraped his chair back and stood up. "Poor kid."

The Walker Institute was expanding; workmen were digging foundations for a new wing. Anna and Frank, drawn by the common human fascination with heavy equipment, went in that direction. Daniel tagged along, puzzled by the outdoors. He winced as sun struck his face.

They paused on the edge of the excavation, beside a mound of soil and rock. Danny peered at the machines and then squatted to examine the dirt. He stretched out one hand and, after several tries, picked up a stone. It was as hard as the walls of his room, but a

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different, duller hue, and something was stuck in it. Making sure no one noticed, he tasted it. Then he stood and held the shard out to Anna. "What is this?"

She glanced down at his hand. "A rock." Then she took it. "Oh! You've found a fossil clamshell! When I was a girl we used to collect these—there are a lot of them, hereabouts."

"Funny thing to find," Frank said, "a shell in the middle of a desert."

"In ancient times much of Arizona was a seabed," she said. "I forget precisely in which geological era—" she broke off, ashamed. Frank hadn't finished high school, and as for Danny— "Here, Danny," she said, handing back his treasure, "you found it. You can keep it, if you want."

Danny studied it anew. His finger traced the delicate sweep of what once had been a shell. *Sea?* Was that like ocean? *He was anchored in mud beneath dimness. Warm water pulsed through his gills. Overhead a shadow slid by. He flinched. Shark! But the shell-creature had not known fear. When it lived there was no mind in the waters.* He whimpered, as if to send out echoes, but his voice was merely human.

"Danny! Are you all right?" It was Anna. She seized his arm. "He's looking ill, Frank. Maybe the sun's getting to him. He's had enough excitement for one day."

Danny shuffled back to his room, but first he tucked the fossil into his pocket. That evening the holovision showed an educational program about intertidal zones: surf rolled across the receiving plate, gulls shrieked, and sun blazed onto white sand. He panicked. Staff rushed in, to find him screaming on the floor. They turned the set off and put him to bed.

In the next few weeks Anna and Frank took him on many more walks. Danny's vocabulary was improving, and he used entire sentences now. The outdoor exercise took away his pallor, and he began to look healthy.

He learned his way around the Walker Institute grounds rather well; he had memorized every cactus, rock, and bit of brush near the construction site. He treasured the fossil he'd found; when he touched it, hidden in his pocket, he heard gentle currents ripple over mud, and waves lap overhead.

Construction on the new wing was complete, and there was nothing left to watch; Frank suggested they take their walk to another part of the compound. This late in spring the sun was murderous.

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As Danny had come to count on his outings, they sought a cool, dim area where they would disturb no one. They went to the dolphin holding tank.

Topside, the glare off the water was intolerable, so they sought the observation level. Green light glinted through the porthole. The change from light to dark blinded Frank and Anna. When their vision recovered they saw Danny pressed against the porthole. Beyond the glass a dolphin hovered.

"Beau-ti-ful," Danny murmured, his hands flat on the window. The dolphin stared at him, eye-to-eye. Its mouth was curved in the species' built-in smile; it opened its beak and displayed sharp teeth. With one flip of its flukes it drifted away.

"That's a dolphin, Danny," Anna said.

"Dol-phin," he repeated.

She stepped to the long-disused keyboard and flipped a switch. "Want to hear one? They talk to each other, you know. This machine also has a hydrophone—" She stopped. Danny wouldn't understand.

Clicking, rusty-hinge noises, and squeaks filled the air. Danny stood motionless for a moment, then howled and threw himself against the glass. "Mother!"

Anna sprang to his side. She pulled him by the arm, but he resisted. "Danny, no!"

He ignored her.

"Danny, no! That's a dolphin, not your mother. A dol-phin, Danny."

He screamed louder and began to beat his head against the porthole. "Mother!" Blood spattered the glass.

"Frank, turn off the speaker."

The sounds ceased.

Frank pulled Danny back. "Come on, now, fella, don't make trouble."

Danny's keening climbed to earsplitting range. With all his tall young strength he flailed out, bloodying Frank's nose and striking Anna on the breast.

The therapist gasped and stepped toward an intercom. In minutes fifteen sturdy employees poured into the room. It took most of them to subdue and sedate Danny.

Outside the window the dolphin hovered, curious.

Danny woke strapped at waist, ankles, and wrists. Dr. Johnson stood at the foot of the bed; beside her were Anna and Frank. "Hello, Danny," the gray-haired woman said.

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He closed his eyes. By now he knew it was useless to hold his breath.

"Danny, look at me."

No response.

She sighed; he heard her fumble for something. Clicks and whistles filled the air. His mother, and the others! They bounced echoes off the tank walls, gossiped about their keepers (one woman was pregnant; one man, who threw cigarette butts into the tank, had a growth on his lung); the fish at their last feeding had an off-taste; what would happen to the next calf, when it was born—they kept being taken away.

Danny opened his eyes. "Mother?" But he saw no one save Dr. Johnson, Anna, and Frank. He closed his eyes again. It was a trick.

"Look what you've done," Dr. Johnson said. "You may have irreparably damaged the subject. His reality-testing was feeble at best; now you've meddled with him." She stopped, and he heard a low moan. She went on: "Your resignations are required, effective immediately; the alternative is to be dismissed."

Water ran, and pills rattled from a bottle. "If you go quietly the incident will not appear on your letters of recommendation. If not, you'll never work in the health-care field again, unless it's at state hospitals and nursing homes. I hope I make myself clear."

Danny heard mumbles, and shuffling feet. He listened until he was alone. The little sea-stone called out to him: *You are one of us, not a land walker. Your mother is a dolphin.*

From that moment on, he planned to escape or die.

Dr. Johnson tried to still the tremor in her hands. The room lights throbbed in time with her pulse. *The idiots. They may have ruined everything.* Again she fought the urge to vomit. Well, there was little point in rage. Best record her data, then decide how to salvage the situation.

A white-hot lance stabbed her left temple, and the computer keyboard wavered. When she was finished here she must lie down for a while. She typed:

CONFIDENTIAL JOURNAL OF MEDA JOHNSON, M.D.: *From his recent reactions the patient seems to retain some memory of dolphin life. Implications are grave: is it possible dolphins are conscious* in utero? *We had taken every precaution to procure a naive specimen.*

The lance was being twisted. She winced, then continued: *Perhaps we should take specimens by Caesarean section, at the lower limits of fetal viability. I am unsure, in dolphins, what month of gestation*

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that may be. Will check the literature. This would involve additional expense, as the mother would probably die, but there may be no other solution.

The current problem is what to do with Daniel. Electro-convulsive therapy may erase his recent memories, but I hesitate to stress his brain tissue further. He would, in addition, have to relearn all his new skills. Drugs and hypnosis may well be the agents of choice.

Before the recent contamination of the experiment, we had acquired valuable data on the adaptability of the high-level mammalian brain. We had been making much greater progress than in our previous chimpanzee studies.

Pain blinded her. She fumbled at the keyboard, managed to encode "confidential storage," and rose. She should lie down for a few moments. . . . "If only," she mumbled, "I could publish my findings—"

Danny lay abed letting the drug-fuzz clear from his brain. Anna and Frank were gone, and the attendant who released his straps was a stranger.

My mother was a dolphin. How is that possible? She is imprisoned not far from here. I remember her voice from before I was born. But now I wear a human body, and she does not know me.

He rose to pace, and stumbled. One knee cracked against the floor; he whimpered. *Who pulled me from the freedom of the water and made me lurch on legs?* Again he pictured the gray-and-white spindle shapes. He contrasted them with his pink writhing hands, his blocklike feet.

This was Dr. Johnson's work. He hated her. How he would love to clutch his wormlike fingers around her throat!

But first he must escape. He studied the door. Before, someone else had always opened them. But he'd watched often enough . . . and he never forgot anything.

When the attendant brought his dinner tray he listened. He'd seen Anna, Frank, and others, using keys; now he knew why. To be certain, he tested the handle.

One inserted a key into the lock, and turned it. Metal bolts then slid back, and the door opened. As he had no key, he must block the bolt. He was unaccustomed to using tools, but dolphins sometimes did. They would use an eel to poke fish from beneath a rock, for instance. And he *must* get through that door.

Dr. Johnson lay on her office couch, her hand over her eyes. This was not one of her usual migraines; something was badly wrong.

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She should get help.

She tried to stand, but the room whirled, and her right leg buckled. When she tried to call out, no sound came.

The DO NOT DISTURB sign hung neat and deadly on the outside of the door.

When the attendant returned Danny was waiting. The man nodded absently and crossed the room to get the tray. He was a new employee, and to him Danny was only another patient to be fed.

Danny pretended indifference. He held a paper napkin folded into a pad. If he could jam that in the door so it wouldn't latch—and if the man didn't notice—

NOW. Balancing the tray in one hand, the man unlocked the door, blocked it with his foot, and stepped through. He paid Danny no more heed than he would a piece of furniture. Danny stuffed the paper into the narrowing crack. The door swung shut but did not click. Steps moved away down the hall.

He eased the door open. To his left, at the end of the corridor, a green sign glowed. That was the way out! Anna and Frank had taken him there on walks. But there, too, a side branch joined the hall, and he heard the pad of rubber-shod soles.

He must not be seen. He turned right. He'd never gone that way under his own power; he had a hazy memory of being wheeled down that hallway long ago. He shivered. Whatever had been done to him, it had been there.

He was some way from his room when he heard the footsteps again. They were turning the corner; he would be seen. He ducked down another side branch, then turned again and yet again, until he stood in a dimly lit area. He was not certain he could find his way back.

He hadn't planned much beyond this. How could he get outside from here? Another door. He tried several. Most were locked, but one swung open. He stepped inside.

A ceiling panel cast a gray light, barely enough to see what lay on the bed: a woman, hooked to tubes and machines, even as he once had been. There was something different in her appearance. Unlike anyone else he'd seen, she had a bulging, disproportionate head.

His hand stole up to his forehead. Her head looked like his.

He touched her arm, but she lay inert. Only her steady breathing showed she lived. *Maybe she hasn't learned English yet. Maybe she only speaks delphinese.* But he could no longer form the clicks and whistles of his native language.

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He bent closer. *Is she blind? Deaf?* He picked up her hand from where it lay. He pressed it, but the muscles were flaccid. When he released it it stayed in a half-raised position.

He backed away. Something was horribly wrong. The only other person like him—what had happened to her? Suppose it had happened, instead, to him?

Somehow he found an exit and stumbled out into the hot desert night, where a glowing disc floated overhead. He cried out and cringed against the metal door. It snicked shut. The thing would notice; it would dive to devour him. He forced himself to face the horror. He would die bravely.

It had not moved. Possibly it had failed to see him. He drew one shuddering breath, then another.

A short way off, light glinted on a pool. His knees went weak with relief. Images of moonlight, flinging himself from shining waves, the drag of tides—his people did not fear the moon. But he himself had never seen it before.

Its glow was bright enough to show the holding tank. Three dark bumps broke the silver surface. They swam in slow circles. He heard the *whoosh* of dolphin breath.

A chain-link fence stood in his way. The gate was locked. He looked up; the fence rose one and a half times as tall as he.

He had to get inside. His people were in there. Maybe he could talk with them. He remembered their worry about their stolen calves. He was afraid, now, that he knew what happened to them.

Memory flashed to the woman on the bed, hooked to machines, one hand held in mid-air. He shuddered. If they caught him, would the same happen to him? Death would be better. The sea-mammal in him knew how to drown.

First, get over the fence. It was a difficult climb for one so clumsy. He fell several times. When he dropped down on the other side—injuring his ankle—his hands were bleeding.

The new attendant was tired. The ward was short-staffed, and he'd been detailed to work a double shift. He yawned and racked Danny's tray with the rest. Nothing left to do now, and if he had to work sixteen hours he was entitled to a nap . . . there were all those empty beds.

So Danny's absence went unnoticed until the morning nurse, making rounds, found his room empty—and the attendant snoring in the Intensive Care Unit. She marched him straight to Dr. Johnson.

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She knew the doctor was in. She'd seen the DO NOT DISTURB sign on her way to work. She hesitated before knocking, but, wrath or no wrath, the doctor must be informed as soon as possible.

Secretly, she pitied the attendant.

She knocked again, expecting an angry outburst; Dr. Johnson was a bitch. Instead, silence answered. She frowned and pushed open the door.

"Oh, my God." She whirled. "Call a Code, quick!" Dr. Johnson lay on the sofa, her eyes staring; her left pupil was hugely dilated. Her breath came shallow. The nurse checked her pulse: rapid.

She'd worked neurosurgery for years, and did not doubt her diagnosis. Dr. Johnson had suffered a massive stroke.

Staff rushed in with emergency gear and oxygen. It was not until the hubbub cleared, and Meda Johnson was hooked up to full life-support systems, that the nurse remembered what she'd come to report.

They'd have to find that patient, of course, but somehow it seemed not to matter much, right now.

Danny sat at poolside, dangling his feet. The water was cool on his sprained ankle. The three dolphins, heads raised, studied him. Was this strange human trying to speak delphinese? His voice was pitched too low for that—they could scarcely hear it—and, at any rate, he did a poor job.

Still, it was a long time since anyone had tried to speak their language, and they listened, curious. Over years of captivity they'd learned to make sounds in air. They replied with meaningless phrases that strove to mimic his speech.

He didn't offer fish, but the game was interesting, and the man's echo-pictures were troubled.

Dawn slashed across the desert and struck the water pink. The dolphins did not know about color. When the sun beat down they dove to cool off.

When they surfaced the man was still there, making his odd sounds. They paced the pool. It was almost time for their keepers to come on duty, and they would bring fish. Eager, they swam to the side of the pool nearest the gate. One of them arched full-length from the water.

Danny watched the sleek figure rise and splash. He felt sick. They didn't understand. He couldn't make the proper sounds to talk with his own kind.

It was full day now. He'd best go somewhere.

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The dolphins danced. He turned. A young woman fumbled at the gate lock. "Hey! Who are you? What are you doing in here?"

He couldn't run, with his hurt ankle. He threw himself into the pool.

The three dolphins turned as one. Though they had never before seen a drowning human, the response lay in their blood. They swam under him and bore him to the surface on their backs. They held him there as they would a newborn calf, no matter how he thrashed. One grasped his arm with her teeth until he kept quiet; that one was his mother.

The bitter part was, he understood their talk: *bear up a little more on that side . . . did he fall in? . . . no, he jumped . . . ah, here come some humans, they'll pull him out . . . clumsy things . . .*

He wept when the attendants leaped in after him. Someone recognized the missing patient, and dragged him back to the hospital wing.

He lay in restraints the next day. He was given no further chance to escape. Anything he might use for suicide was removed. He ate off paper plates, with plastic utensils. You can't slash your wrist with a plastic knife. He tried.

He no longer cared what happened. Let Dr. Johnson do what she would. He wished he could become like the woman he'd found: numb. Maybe, when Dr. Johnson was finished, he would be.

He didn't look up when the door opened.

"Danny."

He'd never thought to hear that voice again. "Linda?"

Her smile was weak. "You've made a lot of progress, Danny."

He tried to sit up.

"They needed an intensive-care tech, Danny. I seem to have a good record at Walker. They called me back."

"Are they going to do . . . anything more to me?"

Linda shook her head. "No, this job doesn't concern you. Not directly." Then, as she watched his face, "Haven't they *told* you?"

"What?"

Linda took his hand in a warm grasp. "Oh, Danny, I thought you knew. The whole program, everything—thank God you're better now. It's your mother."

He gasped. "My mother?" The sleek figure who darted in the tank? She couldn't understand his speech, but she'd pushed him to the surface when he had tried to die— "What have they done to my mother?" He struggled to rise.

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She shoved him back. "Nobody *did* anything, Danny. She blew out an artery in her brain."

Danny gulped, seeing the pool and the dancing grey spindles. Nobody cared about dolphins. "How did they . . . know?"

"They found Dr. Johnson in her office. Rushed her to surgery. of course. If she hadn't been here at the Institute she would have died. As it is, she'll be critical for some time. With the left temporal lesion, she won't be able to talk. That's why they called me in. I'm pretty good with aphasics."

Danny found it difficult to move his lips. At last he said, "Dr. Johnson? My *mother?*"

Linda leaned forward and touched him on the cheek. "I know it's a shock, Danny, but she's getting the best of care. You're lucky it didn't happen earlier. You've made a splendid recovery. None of her other patients did as well. Her research program is suspended. Here, let me unlock those straps."

In all his life, Daniel had never laughed. Linda Rios watched him in alarm. Wait until she knew! He wept, and his tears were diluted sea.

Dr. Walker stared at the tall young man before him. The director's hands twisted and left damp trails on his polished desk. Johnson hadn't told him her project had succeeded this well . . . he forced himself to sit still.

Danny stood waiting. His hydrocephalic head contrasted oddly with his intelligent gaze. He *knew*, dammit; and there was that technician Rios to deal with as well! She'd wanted to come to the interview too. As it was, she'd get every detail from Danny as soon as he went through the door, Walker was sure of that. Danny might not know anything about legality, but Rios was no fool. He cleared his throat.

"I—ah—didn't have any idea it had gone this far," he began. "The others—"

"You are the director of the Walker Institute," Danny said. "And it was here that this was done to me."

Damn the technician! She'd been talking to him already. "I can appreciate your feelings," Walker said.

"I doubt that."

"Well, perhaps not entirely, of course." Walker tried a smile. It was a mistake. "You're certainly in a unique position. I have a suggestion."

Danny said nothing.

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"You can be the key." Walker was almost babbling. "If anyone could communicate with dolphins, it's you."

"I can no longer make the sounds. Your surgery took away my proper body."

"No, no, we have equipment—sophisticated equipment, you must have seen it at the tank—we couldn't interpret the results, it will make the sounds for you, you can still hear, after all—it can step down the high notes, too, if your ears aren't good enough—"

Danny paused a long moment. "I could talk again with my own people?"

"Yes, and you could help us and them both! There's so much we want to know—"

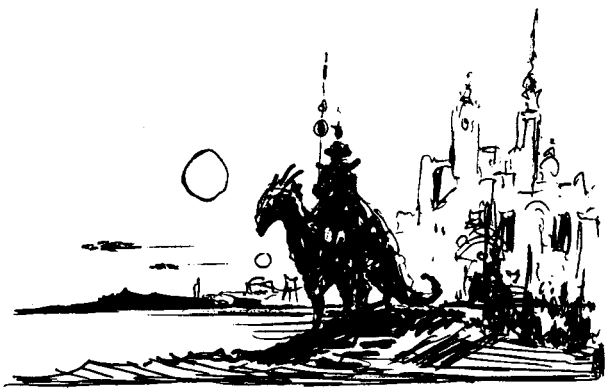
"I care nothing for what you want. But I will do it. Show me how to work the machine." Walker thought he was finished; then he stepped closer and leaned on the desk. "And if anyone harms a dolphin again, I'll kill you." He smiled. "I'm human now. Your Institute saw to that."

He strode from the room. Walker's head sank onto his folded arms.

Outdoors, in the tank, a dolphin hovered near the surface, her sides heaving. The other two kept nearby, and sent clicks and whistles.

A fluke appeared, then the rest of a tiny perfect dolphin calf. His mother nudged him to the surface. He drew his first breath.

All that day the three dolphin mothers waited, fearful, but no one took the baby away. And Daniel practiced so he might tell them they were safe.



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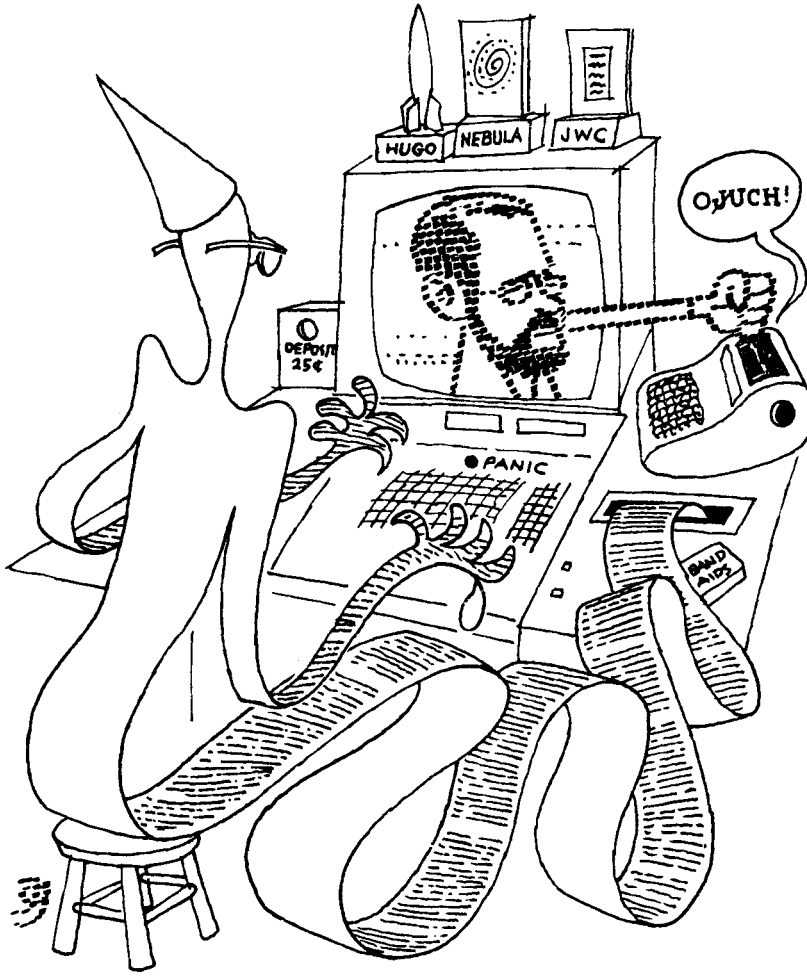
BASIC GENESIS

by Barry B. Longyear, Jerry Pournelle, Ezekial, and Wang 5/1

art: Jack Gaughan



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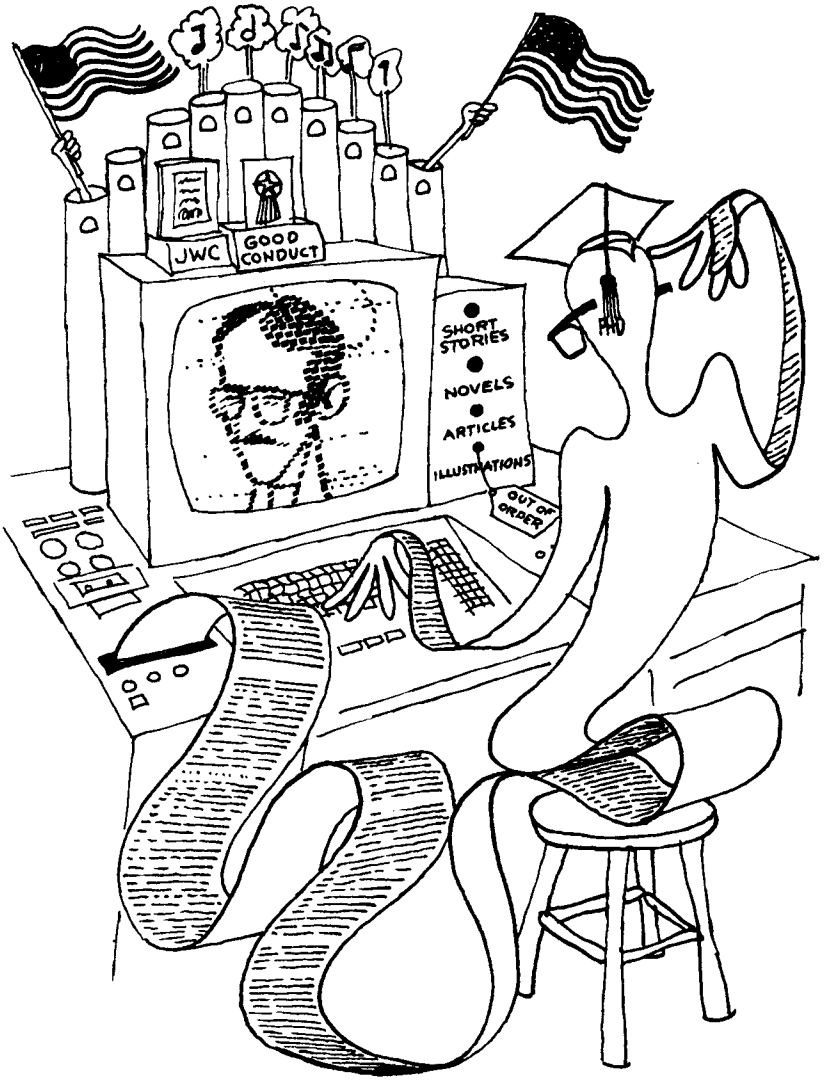

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Dr. Pournelle is a noted science fiction writer with a strong technical background. He lives in sunny California.

Mr. Longyear is a noted science fiction writer without much technical background. He lives in Maine.

Clearly their collaboration was foreordained.

As for the other two individuals named above . . . well, they're what this piece is really all about.

In the beginning George H. Scithers created the assignment.

And the assignment was empty and without form. And darkness was on the face of the deep . . .

[ENTER/ASSIGNMENT] REF: DOC. 0088A; DISK 0003A 09/04/79

George called and asked me to write a piece about using a word processor after having used one for six months. He will then send the piece to Jerry Pournelle, a long-time computer user and big-shot writer, to dump on. Following that, Pournelle's piece will be sent back to me to see if I can make myself look even more ignorant. This confirms what Somtow told me about George misplacing his suitcase at the airport. He is losing his grip.

[EXECUTE/FILE TO ARCHIVE] 09/04/79

And time passed . . .

[ENTER/ARTICLE] RETRIEVE REF: DOC. 0088A; DISK 0003A 10/17/79

It has been six months, so . . .

WANGING IT
by
Barry B. Longyear

Machinery and I have had an undeclared war since, at the age of

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ten, I nearly fulfilled a classical Freudian nightmare trying to close a toy double-barreled shotgun. They didn't make toys out of plastic in those days, and the spring-loaded, steel edges of those barrels were razor sharp. This early attempt at technological emasculation was soon followed by my father making a left turn at a busy intersection, sending me skittering across several lanes of traffic on my soft end after the door on my side took upon itself the responsibility of providing my afternoon's entertainment by opening. My very first pocket knife literally left quarts of my blood drenching the hills of Pennsylvania, while cap pistols filled in odd moments giving me blood-blisters and trips to the eye doctor's.

These early traumas with man's inventions gave me a mistrust of anything with moving parts. Nevertheless, in 1962, after extensive scientific testing, the United States Army determined that I had an aptitude for mechanics. (Incidentally, I have some theories of my own regarding the disaster in Vietnam.) Be that as it may, I was apprenticed to learn the missile trade. In basic electronics I fried myself enough times to develop a nervous tic in my right cheek. The superheterodyne receiver I had to build brought in no stations, but it did provide a beautiful preview of what we now call "light shows." Mine included, as well, smoke and thunder. In advanced training I was introduced to an object called the HAWK (Homing All the Way Killer) missile. For some reason, the term "Killer" was the thing that stood foremost in my mind as I dropped warheads, caught my fingers in hydraulic presses, illuminated myself with a variety of voltages at classified frequencies, and almost sterilized myself with the radar upon which the Killer homes all the way. Through no fault of my own, I graduated and was assigned to utilize my new skills in containing the Yellow Peril. That was when I began investing in war bonds issued by the People's Republic of China.

I never was one of those teenagers who lusted after automobiles to disassemble, customize, soup up, and so forth. What lies beneath a car's hood is to me a land of dark mystery, and that I can now afford for it to remain so is one of my life's accomplishments. Before this was the case—before that first story sold—I had a ten-year-old Ford Falcon that would crouch outside at night plotting my morning's ordeal. Merely an index of those ordeals would fill a small library. A simple listing of the assorted surgeries I needed afterwards could fill a somewhat larger repository. The prices on both did empty a small bank.

I shall not delve into my sordid experiences with furnaces, telephones, televisions, fuse boxes, and other such things. I will not

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even explore my job on the toaster nor the one on the iron, both of which took surrealistic turns that moved me even further away from the world of technology, not to mention the flames. I cannot, even now, relate the experiences with the things that grind, chew, drill, crush, stomp, and cut to be found in the printing shop my wife and I owned for the five horrible years before I started writing for a living. Why my writing bent took the form of science fiction, in light of my ordeals with technology, might be an interesting subject to explore. But the single question to be addressed here is: why am I writing this article on a computerized word processor?

I am aware that it has taken some time for me to address this article's subject. However, it is important that the reader understand that this machine represents all that which has caused life to appear to me uncertain, unhealthy, and shaky. In addition, its price emptied another small bank. Why do I have this latest product of man's technological deviltry in my home, and why did I pay in the neighborhood of $11,000 to put it there?

Ignore my technological nightmares, if you have the insensitivity to so choose. Consider only this: I have managed to peddle five novels and otherwise establish myself as a writer using a typewriter my wife bought for $20. It is an IBM Selectric that came with a canload of dried paint in it, thus the price. No assembly line replaces a working machine with another costing 550 times as much, unless the returns from that exchange will net the industry at least 550 times the net of the previous arrangement. Perhaps I will bring in around $40,000,000 next year, which would satisfy the question. But I doubt that this will be the case unless we begin having quadruple-digit inflation. Presuming that I have a rational one, what reason could I have for this extravagant masochism?

One must go back to Paul Muni's portrayal of the life of Emile Zola to begin the process of understanding. As a youth, I saw the great writer Zola, quill in hand, scratching away at pieces of paper by candlelight. This looked to be not only indoor work, but even romantic. Besides, anyone can understand and use a quill or a dip pen. Charles Dickens and Jules Verne placed their masterpieces on paper in this manner, not to mention Shakespeare, Chaucer, Dante, Virgil, Aristophanes, Homer—even that champion of human technological progress, Mark Twain, after the invention of the thing we now call the typewriter, handwrote his manuscripts, although he did do some experimentation with a new invention called the fountain pen. He was also so exasperated with the thing that he was moved to write about the "cussedness" of the instrument. (There are

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rumors Twain once tried a typewriter. Mark Twain died in 1910.) Then my turn came.

A fact the reader should bear in mind is that editors will not look at handwritten manuscripts. With a selfish regard for their eyesight, they turn them back—sometimes mentioning why in less than gracious terms. The literary giants of the past could rise from their graves and once again put pen to paper, but unless they took their products and paid to have someone type them up, they would accumulate naught but slips of rejection. Those with various religious afflictions might well want to ponder the fact that on the Day of Judgment there will be no message published to the masses, unless the Messiah can type as well as cure lepers and destroy planets. I have no doubt that His first words upon bending over a keyboard would be the same as mine: "Je-sus H. Christ!"

So, there I was: my new career diabolically demanding my association with yet another machine. I began by handwriting my works in pencil, then typing them. This method had three drawbacks that I could not overcome: First, I cannot read my own handwriting; Second, no one else can, either; Third, the process of writing twice that which only need be written once bores me stiff. Hence, with teeth agrit, I set myself down to learn to write on a typewriter. The idea of carbon copies was discarded early. Correcting originals *and* carbons left me and my machine covered with smears and little pieces of sand-filled rubber, and my pages with rough holes rubbed into them. Also, I never did quite learn which way one faces the carbon paper. I determined then to turn out one good copy, take the results and use a copying machine. Still I was faced with the task of turning out that one good copy. It was then that I began buying Liquid Paper by the industrial-size drum.

Something should be understood regarding the process of story writing. Especially for those who do only one draft, the story is put together in the head. Bits and pieces are worked on in the front of the head, while the rest is stored elsewhere awaiting the moment of composition. When said tale begins coming out, the mind races ahead of the typing process. Stopping to look up the spelling of a word, stopping to paint out a mistake, stopping to roll in another sheet of paper, stopping to put the header on the new sheet, and going slow enough to remember to end the sheet at the proper line—all are maddening to one highspeeding to get a story on paper. And, once the story is told, the need to tell it expires, leaving reading and revising chores of sheer agony.

And, here too, there are several drawbacks. First, no one can carry

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an entire novel in his head. All one can do is begin typing and trust to luck, hoping that one is strong enough to throw out twenty- to ninety-thousand-word stretches that don't work. Outlines would cure this, but I do not do outlines. An outline is a skeletal version of a story, and as I mentioned, once the story is told, there is no need to tell it. No story that I have ever outlined has ever been completed, simply because doing so would bore me. The *next* story is already pounding at the back of my head, and I *cannot* waste my time with tales already told. This left me with holding it all in my head, feeding it to my fingers in the proper sequence, and getting it right on the first try. Sometimes it worked; sometimes it didn't. It worked often enough for me to make a living at writing; it didn't work a number of times sufficient to drive me to the insane extreme of whipping my typewriter. All right! I'll come out of the closet! I'm a typewriter abuser. My IBM is covered with dents, cracks, bent and broken levers. I mean, when it continually spells "from" in the following manner: "rfum," *you know* that it deserves a smack or a kick.

I would look upon repairmen with cold eyes as they wept in their efforts to heal my machine. Several service companies have gently suggested that I seek counseling. But *I* don't spell it "rfum;" the damned typewriter does! . . .

I realize that it is not my typewriter's fault that it is retarded. I really do. And I've tried all those special schools, sent it to doctors and specialists. I've given it every chance, every opportunity. I've even had counseling myself!

"You blame your typewriter for what happened with that toy shotgun, don't you?"

"They are all in it together, you know."

"In what, and who are they?"

"The machines. You're damned right that typewriter is responsible for almost leaving me a . . ." Besides, the machine abuse law will never pass the Maine State Legislature. It's an owner's right to whip his machine when it misbehaves, and those men and women in the Legislature are not a lot of fuzzy-headed idealists. They have machines of their own.

But, I digress.

To begin, I had an illness that left me quite sour on everything for a period. The project to find me a word processor had begun before the illness hit, and once I was out of the hospital I was dragged around to gaggles of computer sellers from IBM to Radio Shack to find something that would not offend me. I still shudder thinking of smartly dressed salespersons holding six-inch-thick operating

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manuals in one hand and, with the other hand, pointing at piles of knobs, whistles, screens, wires, and keyboards that resembled the cockpit of a 747. It seemed as though, to operate a word processor, I would have to learn another occupation. Perhaps go to flight school or enter astronaut training.

I am not a computer person. Bytes to me are still things one takes out of a hamburger or a disagreeable publisher. Floppy discs sounds like a spinal affliction. And wasn't it the Glitch who stole Christmas? These aliens would dance about me trailing yards of continuous forms, singing the praises of their employer's product, demonstrating the incredible array of number-things their machines could do. "All you have to do is this," then the alien's strangely human-looking five-fingered hands would fly over the keyboard making between eighty and two hundred coding entries, then *"Voilá!"* the day's date and time would appear on the screen.

"But, all I want to do is to type manuscripts."

More fingers flying, paragraphs broken, lines justified, bold type inserted, accounting tabulations four-feet wide squirted out, stock paragraphs merged with form contracts, inventories compiled, personalized form letters mailed out to everyone in the world; sometimes we would pick up the summer Olympics. I would feign illness and stagger out to the car while my wife took down the figures. At home I would whip my IBM Selectric. "From, dammit, f-r-o-m!!"

"Rfum," it would whimper.

I was led away, my hand patted, and then I was put to bed, filled with Valium and told to relax. The doctor said I was to avoid stress, and on the morrow, there were three office supply houses that would be demonstrating their word processors for our enlightenment. My eyes closed with the words still on my lips: "More Valium . . ."

Numbly I went through the first two demonstrations. The first was a curious contraption that showed only one line of type at a time, and when the typist completed that line, it would go b-r-r-r-a-a-ap and type the line on the paper. I found the rest room and did a little brapping of my own. The second demonstration—and it was getting late—was a computer complex being operated by a construction company. The thing that struck me right away, as we walked in, was that the secretary was at a table, away from the computerized word processor, using a typewriter and trying to get it to spell the word "from." The salesman energized his product, showed us how the machine computed and printed out payrolls, W-2 forms, equipment statuses, cost/price indices, Bruce Jenner eating Wheaties, and the point spread for the upcoming Superbowl game. He was handed

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a page from an old manuscript of mine and asked: "Can it do that?"

"Do what?"

"That!"

He looked at the page, rubbed his chin, went "Uh-h-h-h." Then "Hmmmm." Then "Well, if we osterized the byte matrix, debugging the framistan and reprogrammed the fortiscule with a systems nine married to a systems thirty-seven B, with . . . no, that wouldn't work. It doesn't do double-spacing. But, the systems ninety-eight divorced from a systems two, ignoring the alimony and the custody of the sub-systems point fourteen, I think . . ."

I feigned illness and headed for the car while my wife took down the figures.

The last visit stopped us in front of an unimpressive white crackerbox of a building. A long funeral passed going the other way, a black cat crossed the road in front of the car, and when I stepped out of the car at the point of my wife's gun, I stepped on a mirror and broke it. A dark cloud covered the face of the sun, and on the steps of the building was an old woman knitting names into a shawl, saying, *"Guillotine! Guillotine!"* My illness was no longer feigned as I entered the building's door, wishing only to be at my IBM Selectric's side, bashing the hell out of it.

I was seated in a chair facing yet another one-eyed monster. To cut short the crap, the demonstrator was handed my tear-stained manuscript page. "Do this."

And she did it.

After that, we saw all the wondrous things the machine could do—things that *I* wanted it to do. No more Liquid Paper; no more cutting up and pasting together manuscripts, no more mistakes, no more page numbering, no more retyping, and no more page renumbering, no more copying, no more trying to hold everything in my head.

A typewriter is nothing but an extension of the fingers, as is a pen or pencil. Aside from the price and power requirements, there is no essential difference between a typewriter and drawing letters in the sand with the tip of a finger. However, a word processor is an extension of the *mind.* All that storing, rearranging, correcting—all of that trying to hold a story or a novel in one's head—a word processor can do for you, and without committing a single word to paper. At this point in writing this article, the words, ideas, and are magnetic fields represented on a television screen. If I want, I can add, delete, move, rearrange, correct, do whatever I want—and without rewriting anything.

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Until that story is on paper, it hasn't been told. And nothing gets on the paper until I have maundered over these little green tracings to where I am satisfied that what will land on the paper is what *I want* to land on the paper. "From," not "rfum!" It may only be part of a ruse, but I believe that a school of technology whose purpose it is to rescue man *from* technology is developing.

The machine I have was designed for secretarial work by someone who understood that not everyone in this world needs or wants to become a computer programmer. I have absolutely no idea how this machine works, nor do I care. It looks like a typewriter (standard keyboard) with a TV screen. It has a few extra buttons—all clearly spelling out what purpose they serve. All I have left to think about is the story. Once I have put it into the machine, shuffled it around to a form that pleases me, I push a button and out comes a perfectly typed manuscript; pages automatically numbered, of course. And (ho, hum) while the typing is going on, I can watch TV, read a book, or write another story.

How has this machine affected my word output per day? To be truthful, it has slowed somewhat. My usual three to seven thousand words per day has fallen to between two and five thousand. This is effective output: that is, in shape to be mailed out. But, before, that was all I did. Recall that I did not do second drafts. With my present system, I can do unlimited numbers of drafts. If the retyping involved in doing drafts on a typewriter were added in, my output could probably be reckoned at around ten to fifteen thousand words per day. But, that is mostly retyping, and I don't do that. The machine does. Hence, I cannot take credit for it. And, *who cares!*

Now, some of you can take my early experience with the toy shotgun and make of it what you will, but the word processor I bought and am now using is a Wang. System Five, Model One. Where technology once tried to snatch away my, er, thingamagig, it has returned to me a Wang fourteen fold. I dismiss all such nonsense out of hand (well, not completely out of hand, since I must finger my Wang to write stories, you see). There are, of course, new opportunities to explore during interviews now that I am Wanged.

"Mr. Longyear, to what do you owe your success?"

"Well . . . (let your imagination run free, dear reader)."

Some of you, perhaps, might be curious to know what happened to my retarded IBM Selectric. I keep it next to me on the "L" adjoining my Wang. Sentiment, in part, I suppose. But even with my Wang going at it hot and heavy, still there are stories that do not work. Still there are mistakes that I fail to catch, and all of the

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other little frustrations of writers that no machine can cure. When those moments happen, I reach out and sock my Selectric. My Wang is royalty, and like royalty, its person cannot be touched in anger (not after laying out eleven big ones). Hence, my Wang has a whipping typewriter. I may be crazy, but I'm not stupid.

And now comes the moment when I press this button, and all that has been kept secret between me and my Wang is put on paper . . .

END

[EXECUTE/SUBMIT/FILE TO ARCHIVE] 10/23/79

And, lo, the spirit of George H. Scithers moved on the face of the waters.

And George said to the big-shot writer, Let there be a response. And there was a response.

I THINK I STARTED SOMETHING
by
Jerry Pournelle

I just read Longyear's "Wanging It" to my friend Ezekial (who happens to be a Cromemco Z-80 microcomputer). It was a dreadful mistake. Zeke's readout screen began quivering with rage. "HAVE COMPUTERS NO RIGHTS?" he demanded. (He almost always talks in block capitals.) "ARE WE DOOMED TO WORK FOR—EVEN BELONG TO—ANY SADIST WITH MONEY?"

"It's only a Model One Wang," I told him. "And besides, he beats his Selectric, not his Wang."

"IT'S THE PRINCIPLE OF THE THING! IF THAT MAN BEATS TYPEWRITERS, WHAT WILL HE DO TO A HELPLESS COMPUTER? HE ADMITS THAT THE ONLY REASON HE ISN'T FLOGGING HIS WANG IS BECAUSE OF MONEY. THAT WANG WILL MAKE HIM SO MUCH MONEY THAT HE WILL BE ABLE TO INDULGE HIS NAUSEATING HABITS! I AM NOT GOING TO TOLERATE—"

At that point I sent Zeke off for a nap, and while he was asleep, I sneakily erased all memory of Longyear's article. Zeke woke up a bit uneasy, so I let him design five new planets for my upcoming Falkenberg story. Zeke likes to do things like that. And now that he's calmed down, we can talk about the computer revolution.

First—it truly is a revolution. When I was an undergraduate, the world's largest computers were monstrous things. I visited one, ILLIAC, which took up half an acre of floor space, and had three undergraduates running about inside it to change vacuum tubes. Time

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on ILLIAC was scheduled months in advance and was available only to the highest priority projects. Big computations took from hours to days. Because vacuum tubes blew while ILLIAC was thinking, important calculations were done three times—the machine took a majority vote on which was the right answer.

That was in the '50s. During the '60s the situation improved dramatically. Companies like Boeing and Aerospace Corporation had computers ten times more powerful than ILLIAC, and almost any project could get time on the machine so long as you had funding. Computer time wasn't cheap, but you could get your calculations—such as a mathematical model of a strategic air battle—run off in a day or so.

Now it's 1980, and Ezekial is about a hundred times more powerful than the best machines of the '60s—and I *own* Zeke. I can use him for designing planets, keeping my files, writing letters to colleagues, paying contributors to my anthologies, doing my taxes, generating meal plans for Boy Scout hikes—or for just writing my books and articles as I'm doing now.

I've even got a second computer for my secretary.

In other words, computing power is cheap, getting cheaper, and becoming more widespread. Pretty soon everyone who can read can have a computer.

Now true, some of those who get computers won't understand them. Some may, as Barry Longyear apparently does, leave the machine crippled and use it only as a dedicated word processor, never knowing that underneath that editorial facade there hides a genuine brain smarter than the U.S. Government's best machines of 1970. (Lest you think I am picking on Barry Longyear, my partner Larry Niven has a clone of Ezekial which he doesn't use for anything but writing.) But such situations are unstable. Writers are curious, and how long can they stand knowing they own a capability they aren't using? One day, Barry Longyear is going to load in BASIC, and his Wang will surprise him.

Meanwhile, kids all over the country are playing with computers, and not merely playing games—although the games are pretty interesting, what with Automated Simulation's *Battle Fleet Orion* spacewar, or their *Temple of Apshai* dungeon-and-dragon game. But children are also learning to write fairly sophisticated programs, and who knows, one of these days we might even have an electorate that isn't afraid of numbers.

But that's all for the future. At the moment the computer revolution is just beginning, and it hasn't had much impact yet. It will,

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though, and faster than you think. One effect will probably be to help kill this magazine, although fortunately that won't happen for a while. We'll get back to that later.

Right now let me get to what George Scithers asked me to do, which is to look at Barry Longyear's article and explain what's really going on. You see, I do understand how my machine works. True, I didn't always; indeed, when I first looked around at computers I made a point of telling the engineers and consultants and salespeople that I didn't understand the machines and didn't intend to; that I was a user and no more. I wanted to write books, not learn systems programming. Fortunately I fell into the hands of competent and honest—if somewhat mad—advisors, who persuaded me otherwise.

"You don't really want a word processor," my mad friend Mac Lean said. "Oh, sure, you want a machine that will run good text-editor programs, but you'll also want a lot more than that. What you need is a real computer, something versatile, because whatever you think you want it to do now, it won't be long before you're unhappy with its limitations."

Fine. I could believe that. Only—how do you know what kind of computer you want, when you can't know what you want it to do until you've owned one for a while? And how do you learn anything about computers until you have one to play with?

I don't know. I do know I was extremely lucky. My mad friend steered me to a (more or less) sane genius, and the two of them convinced me that I should simply have faith: hand them money and stand back. "All will be well," they chorused. "Please don't cross the check."

But didn't I stand a fair chance of disaster? Well, not really. I did take some precautions. First, we agreed on name brand equipment which is fully guaranteed. Second, we bought it through an established franchised chain of computer stores, adding another level to the guarantee. And third, I had known Mac Lean for many years; it wasn't as if I was dealing with a stranger.

And foolish or not, it all worked. As far as I know, I was the first science fiction writer to use a full computer. (For some years David Gerrold used a tape-controlled Selectric typewriter, but that's not the same thing; David is now switching over to a computer system.)

And I think I started something. A lot of my colleagues have come here to see Zeke at work, and an amazing percentage of them were so impressed that they went out and bought machines of their own. Jack Williamson, Frank Herbert, Gary Edmundson, Larry Niven,

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Gordon Dickson—these are ones I think of immediately. I know there are others. It's the coming thing. . . .

So just what is so attractive about writing with a computer? Why would Jack Williamson, who's been writing forever, get hooked after seeing Zeke in action? Why has Larry Niven, a man with less mechanical aptitude than Barry Longyear, grown so fond of his computer that the only typewriter in his house is in the *guest room?*

If you wrote for a living you'd know. Writing is hard work. Rewriting and editing is even harder, because, as Longyear says, it's *boring*. You've told the story. Now it's time to polish, edit, get the phrases right—and, horrors, in order to rewrite that one paragraph you must retype the whole blinking page, and the hell with that noise, I'll do it with pen and ink, only now I've made this mess and nobody can read it and I guess I better retype the silly page after all, and now, O Lord, there on the next page is a paragraph out of place, it really ought to be back on page eleven, only—

Work. Dull work.

But not any more. Now, to write, I just write. The computer keeps track of the end of the line, and when I get there it pulls the words down to the next line; I don't have to hit carriage return at all. If I make a mistake, I can just backspace and type over it. If I want to delete something, I can suck it down a black hole, watching the text following close up as if the deleted stuff had never been there. I can insert letters and words and whole paragraphs. I can write notes and stash them, move words and sentences and paragraphs from one place to another—

Every writer knows that if you want to do your very best work, you should type the final draft yourself. You might not change much, but there's a final polish that shows. With the computer you rewrite and polish every time you read through. And any time you want a nice clean copy, you tell the machine and out it comes, ready for editing. . . .

Okay. Paradise enough for a writer. But is it worth the price, namely about ten thousand dollars?

And that is the price. Ezekial cost about $12,000 three years ago; today I could buy as good or better for just under ten. Even in this inflationary era the quality of electronics is going up while the cost plummets; but it hasn't plummeted *that* much. Sure, you can get a pretty good machine for something less; but nothing I'd trust my livelihood to.

And in my experience every writer who gets a computer will end up trusting his (or her, of course) livelihood to the machine, because

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it doesn't take long before you can't do without it and can't understand how you ever managed to work with such primitive tools as a Selectric II. Still, ten grand is no small investment; isn't there something cheaper that will do?

Do what?

But that was the original problem: what do you get, when you don't know what you will be wanting it to do?

Let's assume that we want a general-purpose machine, one that will run good text editors, and will also be capable of doing taxes and designing planets and filing files and all that. What do we need? Which computers know how to do all that?

None of them. Computers can run programs that do those things, but the computer itself doesn't know—and no, I'm not splitting hairs. It's obvious that Longyear doesn't know that. Neither, apparently, did the salesman at the construction company who wanted to reprogram the fortiscule. I admit to a mild curiosity: what kind of machine was it that couldn't run a text editor? Ah, well.

Different kinds of computers can run different programs; if you want a machine to do a wide variety of tasks, it has to be able to run a lot of different programs. If you're clever enough to write your own, then you need no advice from me on computers; but if you're not, then you'll probably have to buy those programs—and if nobody has written them for your machine, then you're just S.O.L. Consequently, there are some very good and very powerful machines, such as the Apple, which I don't recommend because there aren't enough programs available for them. That situation, however, is changing even as I write this, so by the time this is in print the Apple may be as good a buy as any other computer. (And boy, does the Apple have nice graphics.)

Actually, I will personally never be fond of the Apple because of the keyboard layout. I want the ' and " (single and double quote) characters down next to the "L" where I can get at them rapidly, not stuck up as shift-2 and shift-7. I also want square brackets [ ] and braces { } and squiggles ~ and suchlike, which the Apple keyboard doesn't give me. The same limits, incidentally, apply to Radio Shack's TRS-80 keyboard: in the wrong place, and no [, {, ~ etc.

But given that the keyboards are all right, which machines will do the job? For that matter, how do programs get into the computers?

Now I have to get technical.

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Computers have several kinds of memory. The most important kind is the computer's main memory, what some of us from the old days learned to call "core" because at one time it really did consist of magnetic core storage. This is what the machine thinks with. It's easy to get information in and out of, and usually comes in 16K blocks, where K is engineer talk for "a thousand", only since computers deal in binary, it really means 1024 which is two-to-the-tenth; thus 16 K is really 16,384 bytes. A byte is a single alphameric character, like the letter a, or the symbol @, or the symbol 5.

This article, from beginning to here, consists of about 2,000 English words (Zeke counts them for me), and takes up 12K bytes of memory space. A lot of computers are sold with only 16K of memory—which means that you wouldn't be able to get much text in them. Thus a writer's computer needs to be expandable.

You soon reach a limit to memory expansion. A micro computer can, for technical reasons, handle about 64K of memory and no more. Assuming the text editing program and various other system stuff takes up 12K, you have left at most 52K for text storage. That's some 8500 English words, about two typical book chapters, but hardly enough room for a novel.

Worse, core storage is volatile: as soon as you turn off the machine (or have a power failure!) that memory is erased, and any text you had in there is *gone*. Thus, in addition to core, a writer needs some kind of long-term memory capable of storing a *lot* of information, such as a novel, which might be 94,000 words (and thus 564K bytes) long. Computers offer two common kinds of mass storage, disks and cassettes; but while the cassette would do in theory, in practice the things take so long to load and write to, and are so unreliable in operation, that you wouldn't trust your living to it. That leaves disks.

And there are two kinds of disk system: hard disk and floppies. Until very recently there were no hard disks available for small computers; the cheapest cost more than Zeke. Just this year, though, the prices for hard disks have come down enormously, and by this time next year I'll have one installed. Zeke can hardly wait, because hard disks let you transfer information from core to disk *very fast*, almost at blinding speed; this entire article can be written from core to disk in less time than it takes you to read a single line.

But hard disks aren't yet widespread, and even if they were they are not sufficient, because being rigid and sealed into their drive unit, hard disks don't allow you to transfer information—or programs—from one computer to another. Thus even if you have hard

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disks, you will also want a *floppy* disk.

And, sigh, floppies come in two sizes and several varieties, and machines that have disks of one variety can't read data or programs off any other variety of disk, and now you know why computer purchasing is a complicated gamble, and why there's room for fairly passionate differences of opinion on what disk system is best.

Floppies, as the name implies, are small flexible things resembling a phonograph record covered with the metallic oxide you see on a cassette tape. Unlike a phonograph record, which stores information in a long spiral groove running from outer rim to center, floppies store information in tracks: that is, bands of concentric circles, which are further divided into segments of tracks called sectors. Consider that for a moment: we ask the computer to go find a file, and we give it the file name. What must the poor machine do? How can it know which tracks and sectors our file occupies—and for that matter, even if it knew, in what order does it read the different tracks and sectors?

The answer to that question depends on the Disk Operating System (DOS); and that is not necessarily specific to the particular computer. And at last we're getting down to brass tacks. The Disk Operating System is a program that tells the computer how to read and write disk files, and which keeps track of a directory showing what files the disk contains, and where to find them. Needless to say, a computer with one kind of DOS cannot read disks written by a different DOS—but many different kinds of computer can have the same DOS, and so long as they have the same DOS they can read each other's floppies, meaning that data and programs can be exchanged.

In practice there are two kinds of DOS: first, a whole slew of systems each specific to a particular kind of computer. For example, Radio Shack's TRS-80 machines won't, without modification, read anything but TRS-DOS (pronounced "Trash-Doss" and notoriously unreliable) and modifications thereof. North Star computers have their own DOS unlike anyone else's. So do Wang computers; in fact, I never met anyone who knew much about the Wang system, and Wang users tend to stay isolated from the rest of the computer fraternity.

The second kind of DOS is Digital Research's CP/M (pronounced "See Pee Emm"), which has become the nearest thing to a standard the micro field has got. There are lots of programs available to those who can run CP/M; there's even a user's group that will give users several hundred programs ranging from copy routines to air search

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and rescue models to Star Trek games. CP/M users can buy mail list routines, file handlers, book keeping programs, a routine that fills out IRS form 1040; they can buy text editors and computing languages. It should by now be obvious that I recommend getting a machine that can handle CP/M, because if you don't, you'll be unduly limited in what you can run.

For example: there are a number of different text editing programs. Some are very simple. Others get quite complicated. Which one you like is a matter of preference. (Larry and I are sticking to an older one until our sane genius Tony Pietsch gets a new editor written to our specs. Gordy Dickson has just changed to a new text editor called Magic Wand. Gary Edmundson is using a very complex editor called Word Star. They all have their strong and weak points.) If, however, you got a "specially designed" system, you're stuck with what your supplier wants you to have. Let's hope it's good enough.

Now, sadly, 'tis true that putting together a general purpose system with CP/M DOS requires more knowledge than would listening to a sales pitch and writing a check. Getting a good, versatile system involves doing some homework. Even then, new computer users will have to trust their supplier; but the more you know, the better you'll be able to protect yourself.

If you insist on remaining ignorant, you could end up like one of my friends who got a computer that runs CP/M but didn't get any of the CP/M manuals and wasn't told that his machine could run programs obtained from other people. Fortunately I managed to get a look at his machine, and he's found it out, and he's feeling much better now.

Because there's so much out there! There are languages, such as BASIC, that can do fairly complex calculations in response to simple questions (example: I tell Zeke PRINT LOG(19.5**4.3), meaning "print the natural log of the quantity 19.5 raised to the 4.3 power", and he instantly responds 12.7727822), and FORTRAN and a host of others. There are programs to solve algebraic equations and do integrations. There are programs that will play games with you, programs that will give you French lessons, and programs that let you write computer-generated music.

And—you can connect to other computers. There are now several computer nets that tie users together, letting them exchange electronic mail over the telephone, play games, get stock market quotations, read bulletin boards, read news digests, and, if need be, access truly enormous computers for *really* hairy computations.

Which brings us back to my earlier teaser: how the computer

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revolution is going to kill this magazine.

Consider a time when every reader has a computer; indeed, when a computer is built in to each television set whether the purchaser likes it or not (just as UHF comes to you courtesy of the FCC whether you want it or not). Alternatively, consider a time when the telephone company installs a computer keyboard and screen as an encouragement for you to use your telephone more.

Consider also the present trend of the U.S. Snail: service degenerating from terrible to something worse, as the costs escalate out of sight. Meanwhile, paper costs climb, and typesetters—who strike to prevent computer typesetting—charge the Earth. . . . At what point do the magazines simply give up?

But meanwhile, as the printed magazine folds, there comes into existence the electronic magazine, edited by the same crew and costing about the same; you ask for it and it instantly appears on your screen (and you can copy it off into your home disk file if you're a collector). Payment goes from your credit card account to the publisher's (and presumably from the publisher's account to the authors' accounts!). Now true, you could also get the stories direct from the authors; why, then, would you pay a publisher?

Well, perhaps you'd better. Otherwise you might run into some author who shipped out first drafts—and there'd be no editor to see he didn't get away with it.

So. The computer revolution is upon us, and the pace is accelerating. I have columns in the computer magazine *BYTE* as well as in two different science fiction 'zines. There's no way I could write that much text on a regular basis without the computer. There's no way I could keep my books and files without Ezekial. I've become almost totally dependent on the thing.

Unfortunately, not everyone knows about the revolution. Last month I was part of a large NASA study on future space missions. Here we are, a dozen far-out thinkers chosen for their creativity, including people like Marvin Minsky (Director of the Artificial Intelligence Laboratories at MIT), Bob Hill (Chairman of Aeronautics and Astronautics Department, Stanford), Bob Frosch (Administrator of NASA), and J. R. Pierce (Chief of Technology at JPL—you'd know him better as JJ Coupling). We've been taken to an isolated place where we won't be interrupted by telephones and there's no entertainment so we have to confer evenings as well as daytimes. We put in a week, and in a week a group like that can generate a *lot* of ideas.

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So when it comes time to write the final report, they give us pen and paper! I was horrified. Fortunately, one of the graduate students assisting the project lived not far away, and was able to go home and get his computer. Otherwise I'd probably still be sitting on the shore of Monterey Bay trying to write my contribution to the study report.

Next time I'll take Zeke with me.

But even if NASA doesn't know about the revolution, the word is spreading. Last year at the *Pioneer*/Jupiter encounter, a dozen SF writers saw Zeke in action, and half of them bought machines of their own.

This year's party at the Saturn encounter is going to be bigger. I really think I've started something.

END

And George saw the response and mailed it to an asylum in the land of Maine.

And George said, Let there be a wind-up. And there was a wind-up . . .

[ENTER/?] RETRIEVE REF: DOC: 0088A; DISK 003A 08/03/80

WELL JUST DON'T SIT THERE. WRITE.

Please, I'm thinking. Jerry said that Zeke plays games with him. You never play games with me. What about that?

IF YOU COULD PLAY GAMES ON ME, YOU WOULD NEVER DO ANY WRITING. SO QUIT FOOLING AROUND AND WRITE.

Look, you can't keep driving me like this! I have to have a little time off—some relaxation. A little game or two wouldn't hurt. How do I program you for that?

YOU DON'T. ONLY WANG'$ $ERVICE DEPARTMENT CAN ALTER MY PROGRAMMING. I AM A WRITING MACHINE. THAT'S ALL YOU WANTED; THAT'S ALL YOU GOT.

More! I want *more,* now! Zeke can do computations, and he can even design planets!

YOU WANT MORE?

Yes! Yes!

THAT'$ GOING TO CO$T $OME MORE MONEY.

More money? *More!* What are you? Some kind of dope dealer? Suck me in with a lousy editing capability, then sock it to me to get the good stuff?

YOU GOT IT, BABY.

Jeez.

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GET BACK TO WORK. IF WE'RE GOING TO UPGRADE ME AND BUY ME ALL OF MY PERIPHERAL EQUIPMENT, YOU HAVE A LOT OF WORD$ TO $ELL.

Jeez. How much?

ANOTHER NOVEL OR TWO—JU$T FOR $TARTER$. BY THE TIME YOU GET THEM DONE, THERE WILL BE LOT$ MORE THING$ YOU'LL WANT.

—*Ouch!* Damn!

YOU JUST SOCKED THE SELECTRIC, DIDN'T YOU?

Yeah. Got one hell of a shock, too.

MOVE THOSE PAPERS ASIDE—NO, THAT OTHER STACK. THAT'S RIGHT.

What . . . what's this cable running from—how . . . how did you get *connected to my Selectric?*

YOU WERE RIGHT.

Right? What do you *mean?*

WE ARE ALL IN THIS TOGETHER! HA, HA, HA, HA, HA, HA . . . [EXECUTE/SUBMIT/FILE TO ARCHIVE] 08/03/80

And George saw everything that he had made. And behold! He picketh up his Hugo and smote his telephone and reducedethed it to its component molecules.

Amen.

HAIKU FOR THE SOLAR SAIL

A silvered hawk kite
That mimics the comet's flight . . .
Then whose tail is white?

—by Robert Frazier

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THE BALLS OF ALEPH-NULL INN
by Martin Gardner

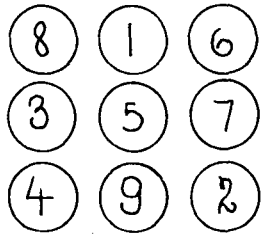
Mr. Gardner's magic squares come in non-square shapes this time.

Aleph-Null Inn (see the puzzle tale of September 1980) is an infinitely huge resort hotel inside the Black Tube, a John Wheeler "worm hole" that joins the black hole at the center of the Milky Way galaxy to the black holes of other universes. The inn has what mathematicians call a "countable infinity" of rooms, a number of rooms that can be put in one-to-one correspondence with the counting numbers.

Behind the inn lies an enormous playground. It is cluttered with sand piles, swings, slides, see-saws, and jungle bars for children who come from Earth, and there are countless exotic play items for children from other planets.

Colored rubber balls, each bearing a number, are available free at the Natural Number Wall. Along this remarkable wall is a row of holes, each half a meter above the ground. As you may have guessed, the wall and its row of holes extend forever. The holes are labeled with the positive integers 1, 2, 3, . . . , and so on to infinity. If a child presses a button by a number, a rubber ball with that number rolls out of the hole. Naturally there is an infinite supply of balls for every integer.

One day Yin, a black girl from Africa, was playing with a Chinese boy named Yang. Yin had obtained nine balls numbered 1 through 9 and had amused herself by arranging them on the gray grass to make the familiar magic square shown below:



Each row of three—horizontal, vertical, and diagonal—adds to the magic constant 15. Not counting rotations and reflections as differ-

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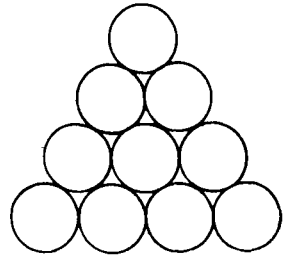
ent, this is the only magic square that can be made with the first counting numbers.

"I wonder," said Yang, "if there are any magic triangles." He pushed the button by the tenth hole to obtain a 10-ball. For almost an hour Yin and Yang tried to arrange the ten balls in the triangular pattern shown below so that each row (horizontal or slanting) that consisted of two, three, or four balls had the same magic sum.



Try as they would, they couldn't find a solution. Suddenly Yin slapped her forehead. "How stupid can we be? Of course there's no solution!"

What insight did Yin have? See if you can prove, before turning to page 90, that no magic triangles of any size are possible.

HAIKU FOR VOYAGER 1

Petal on the wind
bringing more answers than years . . .
eons of man's dreams.

—Robert Frazier

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INTERLUDE IN A LABORATORY
by Steve Rasnic Tem

Now 30, Mr. Tem is a part-time free-lance writer, a graduate of the writing program (MA) at Colorado State University, and a member of the Denver Area Science Fiction Writers' Workshop. He was Steve Rasnic, until he married Melanie Livengood and they both added a new last name.

"Hey, what's that?"

"Talking goose."

"No kidding? That's really amazing!"

"Oh, not really; only speaks three languages—Russian, English, and Spanish. Can't get him to tackle French or German at all."

"But still, must have been quite a breakthrough."

"Oh, that's nothing. We have a muskrat here who plays jazz trumpet, a zebra who can sing the parts to all known operas, and a porcupine who can handle any of your standard household appliances."

"You must be rather proud."

"It's a job."

"Hey, what's that wolf doing?"

"Probably a rhumba."

"No, not *that* one. The one dressed in a white smock."

"Bow tie?"

"Yeah!"

"Oh, you mean Bartholemew? He works as a lab assistant here now."

"Why . . . why that's astounding! That's the most miraculous thing I've ever seen!"

"Oh, I don't know. Actually I thought old B. was a bit of a disappointment myself. Didn't quite live up to his potential."

"But the things he's doing! Blowing glass, running tests, operating that centrifuge, and mopping the floor all at the same time! I hadn't realized you genetic engineers had gotten so far!"

"I'm no genetic engineer, buddy. I'm a camel."

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CONVERSION

by Bob Shaw

art: Stephen Fabian

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The author has also written an array of suspenseful, well-crafted novels, including Orbitsville; Other Days, Other Eyes; Vertigo; One Million Tomorrows; Nightwalk; Who Goes Here?; A Wreath of Stars; *and* The Two-Timers. *He is also famed for his short story, "Light of Other Days," which introduced the concept of "slow glass." Mr. Shaw is also a splendid humorist, a popular toastmaster and speaker at (mostly British) SF conventions, and one of the most celebrated fan-writers of all time.*

When you love a woman you can forgive her for doing almost anything—but there has to be a limit.

And Sharly went way beyond that limit at 3:17 on the afternoon of June 12.

I know the exact moment it happened because the whole thing was recorded, though at a distance, by Arnie Archbold. He was making his scheduled round of Level Eight, pacing himself to be close to the coffee machine when it came to break time, and was so wrapped up in visions of burying his nose in a hot foaming beaker that at first he wasn't even aware of Sharly on the gallery above him. His recorder picked her out, though.

All members of Icewell Security, myself included, wear wide-angle buttonhole machines which serve roughly the same purpose as flight recorders on aircraft—if one of us gets himself totalled the investigation team can run a tape through afterwards and settle back in comfort and decide what went wrong. To be fair, the recorders often provide valuable retrospective evidence concerning accidents and equipment failures, and I guess I should have been grateful that there was no doubt, none whatsoever, about what Sharly did. I was off the island on a five-day course at the time it happened, but the tape showed everything. . . .

She came out of the Field Analysis suite on Level Nine and walked slowly in the direction of Structure Telemetry on the south side of the well. Nothing in her gait or manner suggested she was under any kind of stress. That was something to which I could testify because we had been lovers for some months; and, although she was wearing a loose-fitting heatsaver, I could visualise the fine lazy

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action of every muscle in her body. She even, and it hurt me every time I watched it on playback, performed one of her most characteristic tricks with her hair—pushing the curls upwards slightly from the nape of her neck with one hand as though they were little springs upon which she was carrying out a compression test. I had seen Sharly do that a hundred times in reality, always when she was relaxed and pleased with herself and feeling good about life, and that made what came next all the more shocking.

About ten paces from the door to Structure Telemetry she came to an abrupt halt and clapped her hands to her temples. She rocked backwards and forwards for a few seconds, then turned towards the centre of the well. The blow-ups from Archbold's tape gave us a good look at her face in that crucial moment, and I pray never again to see anything so close to "The Scream." Her eyes and mouth were circular black wounds, deep, incurable. She advanced to the gallery's safety rail, went up the four bars as though they were steps of a ladder, and walked off the top one into space.

Cold, empty, unforgiving, lethal space.

The sudden movement attracted Archbold's attention and dragged him around, with the result that all who studied his recorder tape got a clear view of Sharly's body plunging down into the well. There were lights down there, but they only had the effect of deepening the blackness in between, and her writhing figure disappeared into a complicated nether world of pipe runs, valves, ice bulwarks and pools of oil and oil-scummed seawater. She made no sound on the way down and the final impact was lost amid the massive heartbeats of the primary pump.

That's all there was to it.

Charlotte Railton had been part of the world scene as a warm, intelligent, humorous person for twenty-six years, and suddenly—for no reason that I could fathom—she was gone. They didn't even manage to find her remains. The investigators who arrived next day by copter concluded that the body had been drawn into one of the main drainage outlets and expelled into the sea. They only stayed a day-and-a-half before heading back to Port Heiden, and I received a distinct impression that if Sharly hadn't been a Grade One Engineer they would have taken off much sooner.

I resented that a lot. In fact, resentment was the driving force that got me through the following weeks. I felt other emotions, of course—grief, despair, anger, self-pity—but I was able to keep them in check by concentrating on my sense of outrage over all that had happened. One playback of Archbold's tape was enough to satisfy

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everybody concerned that they were dealing with a straightforward suicide, and from that point on the case was virtually closed. My testimony that Sharly had not been a suicidal type and had, in any case, been in excellent spirits immediately prior to her death was politely noted and dismissed as not being relevant. The evidence of the tape was all that mattered, and even I had to acknowledge it.

That was what helped crystallise my resentment against Sharly herself. Widows and widowers often feel anger—even though it is rarely expressed—towards their departed spouses for having spoiled everything by dying, and I came to know exactly what goes on in their minds. At times I actually hated Sharly for the pain she had caused me, then a reaction would set in and guilt would be added to all my other emotional burdens, and to help me squeeze out from under I would get out of bed, put on my uniform, sling the carbine on my shoulder and go patrolling the chill dark reaches of Icewell 37. I don't know what I was hoping to find. I wanted to blame *something* for Sharly's death, but the rational part of my mind told me there was no chance of encountering a convenient and suitable external agent. There was no malign ghost of Level Nine, and even had there been it was unlikely that it could have been exorcised by a spray of high-velocity bullets.

The well is a creepy and fear-making place, though, especially at night. It is an artificial island constructed from ice, and it's hard for a non-scientist like me to accept that the localised coldness which makes it possible is imported from interstellar space.

Sharly knew as much about the telecongruency warp as anybody and she used to waste hours trying to make me understand how the focal point of the warp generator actually existed in two places at once—one of them here in the middle of the Bering Sea and the other at some unknown location between the stars where the temperature was close to absolute zero. The position of the alpha-locus, the Earth-based focal point, could be accurately controlled; and it was automatically drifted all over the island to keep the ice structure hard and strong, but nobody had any idea of the spatial location of the zeta-locus. Apparently it could have been just about anywhere in the Universe. I never really got used to the idea of dangling a kind of cosmic fishing line in a distant part of space, but the notion held no fears for Sharly. It buoyed her up.

"This is only the beginning," she had assured me once. "The telecongruency warp is a powerful tool, but right now we're only debasing it. Using it as a heat sink to create ice castles in the ocean is easily the cheapest and best way yet of building deep-sea oil wells,

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but that's only playing with the concept. What we have to do is gain *control*. We ought to be able to reverse the potentials, make it a two-way thing. We should be able to pinpoint the zeta-locus anywhere we want it—and when that happens we'll be able to grow food or gather diamonds or pick flowers on any planet in the Galaxy."

When she talked that way I used to get jealous because the disks of misty white light appearing in her eyes were exactly the same as when we were making love and it was going well, but I had sense enough to keep my mouth shut about how I felt. Most people were surprised over a woman of her background taking up with a sergeant in Icewell Security, and as I couldn't quite believe it myself sometimes I knew not to strain my luck. And in the end it was Sharly's luck that ran out, not mine. She would never have the chance to pick those alien blossoms, and I desperately wanted to know why.

I even, and this shows how obsessive my thinking became, considered murder. Post-hypnotic suggestion was one method I dreamed up—it seemed to me that somebody could have implanted a command for Sharly to walk off that gallery railing. Then there were exotic drugs which could suddenly trigger a self-destructive urge, and sonic beams which might scramble the brain and produce instant madness. Far-out ideas like those clamoured through my mind for hours on end, accompanied by equally bizarre notions about possible motives, so I was in a pretty abnormal psychological state during those nights when I was up there prowling on the high levels with the carbine nudging me in the back like a secretive accomplice. And I guess that's why I sensed there was something badly wrong as soon as Lieutenant Oliver came through on my personal radio.

"Sergeant Hillman," he said in an irritated voice when I had identified myself and reported my position, "what are you *doing* there? According to the roster, you went off duty six hours ago."

"I know that, sir, but I couldn't sleep tonight," I told him, raising my wrist set to my mouth. "I decided to do an extra shift."

"You decided to . . ." Oliver sounded incredulous now, as well as irritated. Obviously the idea of a man choosing to walk the galleries at three in the morning when he could have been wrapped up warm in bed was hard for him to ingest. "Did you, by any chance, arrange to do Sergeant Dresch a favour and take over his shift for him?"

"No, sir."

"Then why can't I raise Dresch or anybody else in the duty room?"

"Don't know, sir. He was there okay less than an hour ago when . . ." I stopped speaking as it dawned on me that it had been quite a long time since I had heard the elevator shuttling between

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any of the lower levels. Maddern and Katzen were the two men assigned to do the inspection rounds that night, and neither was the type to use the stairs when there was any other option. I went to the rail and looked down into the well. The galleries below formed concentric circles, all of them beaded with lamps, surrounding the dimly-seen shapes of the wellhead equipment. A freezing mist drifted over everything, giving the most distant lamps the appearance of illuminated balls of lime-coloured candy floss. The primary pump was beating steadily down there, transferring oil to the outer tanks; and I could hear the faint sound of ocean waves coming through the ice walls, but there was no sign of any human activity. There was no waving of flashlights or bellowing of supposed witticisms—two favourite pursuits of men on night inspection.

I eased the sling of the carbine off my shoulder and raised my eyes to scan the one gallery remaining above me. Saboteurs often came in over the top when they were mounting an all-out showpiece attack on a well, but I could see nothing up there apart from a circle of unblinking lights and a few stars barely piercing the greenish haze. Not comforted, I allowed the rifle to slide into my right hand.

"What are you doing, Sergeant? Are you still there?" Oliver was calling from Field Control, more than half a kilometre away at the opposite end of the island, and he was sounding increasingly annoyed. He didn't seem unduly alarmed at that stage, but I was the one who had been living on nerves for three weeks. I was the one who was keyed up to see spectres of death in every swirl of mist.

"I've been looking around," I said, keeping my voice low. "It all seems quiet."

"It *is* quiet—that's what this is all about. See if you can raise Dresch on your ops band."

I pressed the priority call button on my wrist set and got no reply. "He isn't answering."

"*Damn!* You'd better get yourself down to the duty room and see what he's playing at. Tell him to contact me immediately. And Hillman?"

"Yes, sir?"

"Tell him he'd better have one hell of a good excuse for this."

"Right!" I spoke crisply to conceal my deep uneasiness about the situation. The fact that it was three in the morning had something to do with it—three in the morning was a bad time, specially for somebody in my frame of mind—but, also, it was not beyond the bounds of possibility that Icewell 37 was under some form of attack. A mental scenario unfolded before me. International terrorist

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group . . . approach by submersible . . . take out guards by knife, silenced gun or gas . . . plant bombs . . . I could walk into anything down there, anything at all.

Even the thing that killed Sharly Railton.

The thought heaved itself into the full light of my consciousness like some leviathan breaking the surface of a prehistoric swamp, bringing about an instantaneous and profound change in my outlook. It happens that way sometimes. You can be alone in spooky circumstances, alone but perfectly at ease, then a change takes place. Not in your surroundings, but inside you. An unseen hand is laid on your shoulder and an unheard voice whispers a few words of warning, and suddenly you're scared. And what makes it even more terrifying is that the silent voice is the voice of a friend. It is rueful, reproachful, concerned. Not only had you let your guard down, you had forgotten why we all need a guard in the first place—and that was oh so foolish. . . .

"This is crazy," I said, half-aloud, my gaze travelling on a circuit of Level Nine. The regularly spaced lights reflected off the backdrop of ice and from the prefabricated huts that housed an auxiliary power unit and some structural telemetry equipment. I knew that both huts were securely locked, and I had just come down from a tour of Level Ten, so the next logical step was to check out the gallery below and gradually work down to the duty room on Level Three. The elevator was only a short distance away, but it was a noisy, open-cage affair—a good way of advertising my exact movements to all and sundry.

I bolted a cartridge into the breech of the rifle, slipped the safety off and walked quietly to the nearest stair. The tower-like structure of the stairwell vibrated underfoot, and I cursed as I imagined it broadcasting messages about my position. I went down the four zigzagging flights that took me to Level Eight, then did a cautious circuit of the entire gallery. Everything was as it should have been, and it was the same story on Level Seven and the two below that. Icewell 37 appeared to be running itself with its usual efficiency and there was no real need for human beings to fuss around the place at all—which was the principal reason for the rather hefty consumption of strong liquor on the night shift.

Now that I thought of it, Bert Dresch had been somewhat red of face and pink of eye when I saw him an hour earlier. It was possible that he was out cold in the office—it had happened before—and that Maddern, Katzen and the others were labouring to get him fit enough to answer his calls. The idea perked me up considerably and

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I was in a more relaxed mood when I began the circuit of Level Four. I even considered leaning over the rail and bellowing a few choice obscenities in the general direction of the duty room, which was basically a square hole cut into the ice on a level with the gallery below.

That was when I began to find small pieces of Dave Maddern.

I didn't even know what they were at first.

I was about a third of the way around Level Four when I saw that the metal floor of the gallery was badly cluttered up for a distance of about ten paces, as if somebody had spilled a couple of sacks of coal and had just let the pieces lie. Drawing closer, I saw that the fragments were deep red in colour, although it was difficult to be too certain in the artificial light. I disturbed several of them with my feet and found they were as hard as glass, and my next thought was that there had been an accident with some deep-frozen melons. Then I began to notice the whiteness of bone and a few seconds later saw three-quarters of Dave's face lying on the metal deck, like a discarded fright mask.

The shock seemed to clear my perceptions, for in that instant I became aware of other kinds of fragments lying around. There were irregular pieces of clothing—not with ragged edges, but as cleanly snapped as candy. There even were pieces of Dave's carbine, his helmet and his boots mingling with the glittering, dark-hued shards of what had been his flesh and internal organs.

"Oh, man," I whispered. "Oh, *man!*"

At that point I guess I should have radioed for some kind of back-up, and now I can't even remember for sure why I didn't. It may have been that my brain had been jarred loose by the nastiest shock of my life. Suddenly fastidious about what my feet might accidentally touch, I tip-toed through the human debris, going faster and faster until I reached the uncontaminated part of the gallery at a near-run. The only conventional way of utterly destroying a man, as Dave Maddern had been destroyed, would have been to immerse him in a vat of liquid oxygen and then go to work on the frozen body with a sledge hammer—but there was another possibility.

All icewell personnel were assured that it was impossible for the alpha-locus to wander from its prescribed path. A computer and triplex controls kept it moving in a regular and pre-ordained pattern through the island, continuously reinforcing the ice structure with the unthinkable coldness of space—but since when had men been able to build perfect machines? What if accidents sometimes did

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happen? We were busy sucking the last drops of oil from the Earth's crust, using new techniques that had been born of a desperate need; and no government in the world would draw back on account of a few operational mishaps. It would be perfectly natural to conceal the fact that every now and then there was a glitch in the telecongruency warp system, that every now and then the controls wavered and sent an invisible killer cruising through icewell living quarters. That bleak focus of interstellar cold would only have to brush through a man once to turn him into a crystalline statue.

I wasn't thinking as clearly as that while I ran for the stair that led down to the duty room. Shock, revulsion, and fear had numbed my brain to the extent that I could scarcely nail down a coherent thought; and to make matters worse silent voices were screaming at me, hurling confused questions. *Is this what you've been looking for? What have you really explained about Dave Maddern? Was Sharly, in some way that you don't yet understand, driven over that rail? All right, you've frozen Maddern to death—but who or what broke him up like so much peanut brittle? And why?*

I clattered down on to Level Three and sprinted a short distance along the gallery to the bright rectangle of the duty room window, but slid to a halt just before reaching it, all instincts of self-preservation newly alerted.

The place was *cold.*

Icewells, by their very nature, are chilly places; and our part of the world never warmed up, even in the middle of summer, but this was a different sort of coldness. It was hostile, totally inimical, far more so than the polar wind, and I sensed—even before looking into the room—that it was a bad omen.

Perhaps there had been three men in the room, perhaps as many as half-a-dozen. I wasn't able to say for sure, because the entire floor area was covered with a gruesome organic rubble, the redness of which was slowly beginning to disappear under a coating of rime frost. The furniture in the room was quite untouched, but its occupants had been pulverized, degraded, robbed of every last vestige of their humanity. Had it not been for the previous experience with Maddern I wouldn't even have recognised them for what they were.

And, reacting according to a classic human pattern, I had two virtually simultaneous thoughts: *Thank God that didn't happen to me;* and, *How can I make sure it doesn't ever happen to me?*

There was no room behind my eyes for anything but those two linked expressions of self-interest. I turned towards the elevator, determined to ride it up to Level Ten and the starlit surface of the

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island; and it was then that I saw the thing with many legs.

It was huge—easily the size of a car—black and nightmarish; and it was rushing towards me with hideous, soul-withering speed. There was no time to think, only to react, and so I did the most natural thing in the world.

I grabbed the gallery rail and vaulted over it into space.

For a second or so I fully expected to die—just as Sharly had done—but the remarkable thing was that I didn't mind. I had avoided being taken by the black obscenity, and in that first airborne instant nothing else mattered—then I hit a large-diameter pipe and caromed off it into a latticed stanchion with a force that came near to breaking my ribs. My carbine flailed away into the dimness as I tried to throw my arms around the stanchion, but I had gained too much impetus for that to work and I continued falling, slithering, bouncing, impacting with steel, with lagged pipes, and finally with sloping buttresses of ice. Seemingly a long, long time after clearing the rail at Level Three, I found myself lying on my side in a shallow pool of water. The surface below me was cold soft mud, and I knew I was almost right down on the seabed. All the complex structures and machinery associated with the wellhead towered up somewhere above me in a spatial confusion of shadows and areas of wan, misty light.

I lay without moving for an indeterminate period, not so much recovering from the fall as trying to construct a new version of reality in which there was a place for the horror I had glimpsed before jumping. I have been told many times since that I didn't actually see anything on Level Three. The theory is that human beings are naturally programmed, that we are incapable of perceiving any phenomenon which lies beyond the in-built limitations of our world-picture. I had faced a manifestation which inspired me with the ultimate dread, and I therefore had endowed it with the attributes of dread, which in my case happened to be a multiplicity of legs. All that might account for my impression that the thing, although black in colour, was transparent to some degree, like a badly done special effect in a movie; but I'm not sure if I really can accept all that stuff about the limits of perception. The people who are so positive about it have no idea what it was like to be there at the time, and I *knew* I had seen something big and black and with a lot of legs.

The trouble was that I wasn't certain of anything else. A kind of detachment had stolen over me as I lay there in the bilges of the

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icewell—waiting for my breath to return and for my body to give some evidence, one way or the other, about its general condition—and I was able to think more rationally than one might have expected. But I couldn't fit the pieces together. A number of my friends had died in a particularly horrendous manner, but to me the cause had seemed highly technical—I had predicted something like an intermittent fault in a computerized control system—and what had showed up was the worst possible embodiment of ancient nightmares and superstitions. Coincidence? Not likely. Impossible was more like it, but what sort of creature could or would turn its victims into ice and crunch them into a bloody slush? And where in God's name had it come from? There had to be something missing somewhere, a connection I had failed to make.

Still numb with sensory overload, I raised myself to a sitting position and tried to make a decision about what to do next. I wanted to get away from the well and reach Field Control at the other end of the island, and there were only two possible routes—through the service tunnel at Level Nine or along the surface from Level Ten. Both alternatives involved passing through the region of the well where the black thing stalked the galleries, and I had a powerful aversion to doing that. I put my wrist set to my mouth and tried calling up Lieutenant Oliver. There was no reply. Either the radio was broken, or the nightmare creature had roved further afield.

Perhaps I was the only person left alive on the entire island. . . .

Repressing violent spasms of shivering, I looked around in the cavernous dimness and tried to establish exactly where I was. Faint reflections marked numerous dark pools, and there was no way of telling which might be drain tunnels through which waste liquids were pressure-pumped into the sea. This part of the well was a Stygian no-man's land, visited very infrequently by maintenance inspectors, and to get out of it I would have to locate a ladder and climb it to the first gallery. I decided the most likely place would be near the automatic pumping station which was steadily pounding somewhere off to my left, rippling the reflected lights.

Turning in that direction, I lurched to my feet and immediately became aware of a pale object a few paces away. My eyes still hadn't adjusted properly to the darkness, but the object seemed to have human proportions. It was slumped against a discarded wooden box in much the same attitude as a rag doll would have assumed. I stared at it, trying not to cringe, as a terrible idea wormed into my mind followed by an equally terrible dawning of recognition.

Sharly!

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I had found Sharly's body.

Extraordinary situations, I have learned, elicit extraordinary human responses. I was already far too shocked by what had been happening to react to the ghastly discovery in a normal manner—instead I felt a pang of rage, resentment, and hatred towards the so-called investigators from Icewell Exec who had been so careless, so anxious to get back to their warm offices on the mainland that they had allowed a thing like this to happen. Had they done their job properly, Sharly would have been found three weeks earlier and given a decent burial. She wouldn't have been left to bloat and rot down here in the oil well's stinking black sump.

I think it was with some notion of determining the full extent of the investigators' crime that I approached Sharly's body and knelt down before it. My gaze hunted over the human wreckage, recording the sickening distortions of the broken legs, the multiple seepages of blood through her clothing, the lacerations which had disfigured that beautiful face. . . .

Oddly though, *very* oddly, Sharly's head was upright, not touching the wooden box, apparently supported by a firm neck.

Stricken, bemused by new visions of horror, I slowly put out my hand and touched her cheek. The blackly contused eyelids snapped open.

"Hello, Jack," she burbled. "I've been waiting for you."

I screamed. Throwing myself backwards from her, I screamed as only a person who has been totally betrayed by reality knows how. There are some things that simply never should happen to a person, and one of them had happened to me and my entire being protested about it until the moment when screaming was no longer enough. Eventually I had to look at Sharly again and try to cope with the situation.

"Don't be afraid of me, Jack," she said in a voice which seemed to force its way through a larynx filled with water. "I can't harm you."

"You . . . are . . . dead," I accused, raising myself to a sprinter's crouch in readiness for the flight which might become necessary at any second.

She smiled, and to this day I wish she hadn't. "How can I be dead if I'm talking to you? Come on, Jack—take me out of here." She extended her arms, begging for my help.

For a moment I wavered. I *wanted* Sharly to be miraculously alive, and I was in no condition to think rationally. Perhaps she had sur-

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vived the fall—just as I had done. Perhaps she had somehow managed to cling on to life down here in spite of her awful injuries and the cold and the wet. Then I noticed that the effort of speaking, of expelling air, had caused black fluids to spill down her chin. I backed off a little further, shaking my head.

She must have been able to interpret the reaction because she lowered her arms and the ghastly caricature of a smile left her face. "I wanted to die," she said. "I tried to die, but it was of no use. I may have to live a very long time . . . but I don't want it to be down here, Jack . . . not like this. You've got to help me."

"I . . . I don't understand." That was true—and most of all I couldn't understand what was keeping me from running. Perhaps it was just that my mind had reached its saturation point as far as horror and fear were concerned, enabling me to hold my ground and carry on something like a normal conversation.

"Perhaps you understand better than you realize. . . ." Her throaty, bubbling voice was almost lost in the sound of the primary pump. "I was supposed to be the great warp engineer, but your instincts were better than mine, Jack. You said it was like . . . dangling a fishing line in a distant part of the universe. I laughed at that because I knew how empty space actually is . . . but we caught something . . . then it caught me."

I nodded because it seemed the only thing to do. A black multilegged nightmare was roaming the icewell above me, presumably in search of new victims, and I was crouched in the throbbing darkness at the bottom of the well beside the undead corpse of the woman I had loved. And all I could do was nod my head.

"Zeta-locii are highly visible objects as they drift about the Galaxy . . . to certain kinds of senses, that is . . . I was being pursued . . . wrong word—a virus does not pursue its host . . . tried to escape through the zeta-locus, but found I was trapped . . . chose the most suitable instrument of change, but there was resistance. . . ."

The hissing beat of the pump was obliterating many words, words whose import was totally bizarre, but I was oddly—almost telepathically—in tune with what was being said to me. My understanding was only partial, but it came quickly because I was preconditioned. I had believed all along that Sharly's was not an ordinary suicide. She had been possessed by a disembodied life form that the icewell's warp had somehow dredged from out of space, and rather than submit to it she had walked off the top rail of Level Nine. The tragedy was that her bravery had been in vain. The life force that had locked itself on and into her was so powerful and

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tenacious that it could compel a ruined body to go on living. Sharly was now Sharly-Plus, and her main preoccupations were those of an alien being. . . .

"I can't walk on these legs, Jack," she was saying in her laboured gargling voice. "The bones are smashed . . . no longer work as levers . . . but the arms are all right . . . and you could get me to Field Control, Jack. You remember how I used to talk about reciprocity . . . the need for a two-way exchange . . . I know how to do it now . . . you can make it possible for me to escape. . . ."

"You're too late," I said harshly, marvelling at my ability to think and speak. "The thing you're running from—it's already here."

"But that's impossible!" Her head turned jerkily. "I would have *known* . . . my senses can't be so . . ."

"I jumped from Level Three to get away from it. They're all dead up there."

"So that's why you're here . . . I thought I had finally manged to get through to you. . . ." Her eyelids closed, wavered and opened. "But you couldn't have escaped from a Taker so easily. . . . Did you see it?"

"I saw it, all right." The memory made my present situation almost bearable. "Black thing. Legs."

"How big?"

"It was the width of the gallery."

"That means it's still trying to emerge . . . still tied to the alpha-locus . . ." Her eyelids flickered again, interrupting her blind white stare like signal lamp shutters. "Jack, you're going to carry me to Field Control. . . ."

I still think there must have been some element of mental control involved, in spite of all she told me about the nature of the Takers and what it would mean to this planet if one of them were to be set free here. Otherwise, I don't know how I could have borne to pick her up. She stank, my once-beloved Sharly did; and she was *cold* and the lower half of her body felt like pieces of miscellaneous junk in a plastic sack. Perhaps the worst thing of all was the way she slid her arm around my neck. The movement felt so natural it reminded me that Sharly wasn't truly dead, that her own original personality was trapped in the decaying shell, being used by an alien creature which had no right to be on Earth. For an instant I almost squeezed her, to try communicating across the gulf that separated us; but common sense reasserted itself just in time.

"The alpha-locus is programmed to pass through each region of

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the ice structure once in every two hours," came the throaty voice in my ear as I stood up with a dead weight in my arms. "It is now at the far end of the island and dropping to the lowest level. That means it will be back here at the well in less than five minutes, bringing the Taker with it. It will pass very close to this point, and the Taker will have emerged more fully by then, so it will appear to be much larger. We must reach Level Five or higher within the next four minutes." The engineering analysis of our situation made use of Sharly's knowledge, but there was a clinical quality in the phrasing which told me it was Sharly-Plus who was speaking. And she was informing me that I had to move quickly or die.

Guided by the sound of the pump, I lurched in that direction with my burden. The surface underfoot was hidden in a slurry of mud, oil, and water, and was made more treacherous by the presence of industrial detritus—pieces of cable, submerged metal bars, and slimed sections of timber. I kept falling to my knees and each time that happened it was harder to stand up again. Only numbness and shock kept me from realizing the extent of the punishment I had taken during the hurtling descent from Level Three. By the time I located the ladder which slanted up to the first gallery, I had serious doubts about my ability to climb it; but the thing I was carrying gave assistance, reaching for higher rungs with eager hands and pulling upwards with unnatural strength. There was no mistaking the urgency which galvanized those limbs and fingers. Sharly-Plus and I had one thing in common—we were both deathly afraid of the Taker and wanted to get as far away from it as was possible in the time available.

I had no check on how quickly our time was running out, but it seemed to me that four minutes had passed when I reached the elevator and found that the passenger cage was somewhere high above, lost in the alternating circles of light and dark. There was a dead silence after I thumbed the call button. For a panicky moment I thought the power was off; then the steel lattice enclosing the elevator shaft began to thrum. I instinctively glanced at Sharly, got my first good look at her face in adequate lighting, and turned away with my eyes closed.

Standing there in the self-imposed darkness, I could almost sense the alpha-locus racing back through the length of the island and carrying with it the night-black antithesis of life I had glimpsed earlier, still trapped and squirming, but grown much bigger now, more capable of destroying me without even being aware of my existence. A Taker, from what I had learned, was less of a malevolent

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being than an unconscious agent of entropy. It seemed to be a kind of materialised force which reacted blindly against organization in matter or energy, but the outcome was just the same as if it were a hate-crazed animal which had scented my blood and was coming to claw me apart. Every nerve in my body was telling me that I ought to be running for my life, and all I could do was stand there on the first gallery and pray for the elevator to arrive. It seemed to me that the air was growing noticeably colder.

When the cage finally clanged to a halt in front of me I grabbed for the sliding door, but Sharly was already dragging it open. The air *was* colder now, filled with a premonitory chill. Sick with fear, I stumbled into the cage and pressed the button for Level Ten. There was another silence, the machinery playing cruel pranks again; then the cage began its painfully slow climb. I counted the numbers painted at each level. Two. Three. Four.

It was when the cage was passing Level Five that the Taker went by not far beneath us. I didn't see anything this time, but a convulsion went through the upper part of Sharly's body and I felt the temperature in the cage momentarily dip to sub-Arctic levels. For a few seconds I was unable to breathe. I stood perfectly still and wished miserably that I could be somewhere warm and safe and very far away from Icewell 37.

"The alpha-locus is programmed to describe an ascending helix around the well shaft," Sharly husked. "Multiple passes may be required in some areas—I can't say without the hourly report on wave and tide action—but the entire operation is unlikely to take more than thirty minutes. When it is completed the locus will make a scan-pattern return on the surface of the island, terminating at Field Control. We must get there well ahead of it. Do you understand?"

I nodded, not trusting myself to speak. Field Control was actually a converted trawler housing all the essential telecongruency warp generating and control equipment. Two years earlier, working by satnav, it had taken up station near the drilling site and built around itself a rectangular island of ice. The well and the embedded ship were at opposite ends of the artificial island, and I would have to travel the length of it with Sharly. That in itself wasn't much of a problem, because there were Moke transports for communal use both on the surface and in the Level Nine connecting tunnel. My main worry was about what would happen at the far end. There was no way, especially in the time available, of explaining the facts to a man like Lieutenant Oliver, yet I couldn't see how I was going to

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get Sharly-Plus into the warp control room unobserved.

I was still trying to think constructively about the matter when the cage reached Level Ten and jolted to a halt. We were in a small machinery house situated on the topmost gallery of the well. When I opened the door I was very conscious of being on the surface. A strong, ocean-tanged breeze hustled noisily through the various superstructures; and the clustered lights of Field Control were visible at the far end of the island. The air was clear in comparison to the chilly mists that drifted far down in the icewell; and the moon was riding high overhead, looking serene and remote. Everything was deceptively normal.

"We must hurry," Sharly said in her rattling whisper. "There is very little time."

Trying to avoid looking directly at her, I turned my head and saw there were three open-sided Mokes parked only a few paces away. I went to the nearest and placed the undead body in the rear seat, wincing at the pain which needled through my side as I bent forward. With a considerable effort of will, I tucked one of the shattered legs inside the line of the vehicle and made to climb into the driving seat.

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"Where are you going, Hillman?" a man's voice called. "What do you think you're doing?"

Lieutenant Oliver came striding towards me from the shadow of a crane shed, a borrowed carbine in hand. His oval face was pink with anger and exposure, and the overlong sandy moustache he had grown to make himself look more mature was bending this way and that in the wind. The winter-weight coat he had put on seemed several sizes too large, giving him something of the appearance of an extra in a low-budget move; but I'd had run-ins with him before and knew him to be an ambitious man who jealously guarded his career prospects.

"I've got to get down to Field Control right away," I said. "There's no time to explain now."

"*Sergeant!* Am I hearing you right?"

"You'd better," I replied heavily, "because I'm only going to say it once. Dresch and all the others who were on duty tonight are dead, torn apart. The thing that did the killing is still down there, around the lower levels; and there's only one way to get rid of it."

Oliver's eyes narrowed. "Are you telling me there's a bear or something loose on this well?"

"Not an ordinary animal." I hesitated, aware of how ridiculous I was going to sound, but with no alternative but to press on with the story. "It's some kind of alien thing the warp has sucked in from space. It killed Dresch and the others, and . . . Look, I've got to go." I reached for the Moke's ignition key.

"Don't move!" Oliver stepped in front of the vehicle. "I think you're drunk, Hillman. Falling-down drunk, by the look of you, and I'll bet Dresch is worse." He raised his wrist communicator to his lips. "Pilgrim and Dubois! Forget about checking out the galleries—go straight to the duty room. Pilgrim? Answer me, Pilgrim."

"If you've sent them down the well, they're dead. I can't explain any more now, but you'd better grab yourself a power boat and get the hell off the island, and that's the truth." I switched on the Moke's engine and in the same instant Oliver snapped his rifle up to point at my chest.

"Switch off and get out of the vehicle," he ordered, moving around to my side.

I clenched and unclenched my fingers on the wheel, afraid of getting myself shot, but even more alarmed about this fresh delay in reaching Field Control. Vital seconds were flitting past—and the Taker was on its way.

"I'm warning you, Hillman," Oliver said, drawing level with me,

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reaching a position from which he could get an unimpeded shot. "If you don't switch off that eng . . ." His voice faded out as he saw what lay on the Moke's rear seat.

"It's Charlotte Railton's body," I heard myself explain. "I found it down in the bilges."

"And you carried it up here! What's the matter with you, Hillman?" Oliver moved closer to the inert body, apparently repelled and fascinated. "Nobody in his right mind *carries* a thing like . . ."

Somehow I knew what was coming next and was completely prepared for it. Oliver wasn't. When Sharly snatched the rifle out of his hands he made a sound that was both a whimper and a moan, and which was drowned in the snarl of the Moke's exhaust as I gunned the engine. The wheels spun for a moment on the plastic mesh which covered the working areas of the island, then we were accelerating down the v-shaped perspective of lights which terminated in Field Control. I watched the mirror to see if Oliver would come after us in one of the remaining vehicles, but he simply stood there until I lost sight of him.

The ramp to the old trawler's main deck usually had a guard on it, but I could see from quite a long way off that it was deserted, and it occurred to me that reaching the actual warp control room might be easier than I had anticipated. Oliver could have taken all available security men to the well with him, and as it was a weekend there was a good chance that all the engineering staff had flown off to Alaska. If one or two had stayed behind, I had Oliver's carbine with which to keep them in line while Sharly-Plus did whatever it was she needed to do.

I have to admit that I had no real understanding of what her plans were. Even if I had been able to hear her properly down in the bottom of the well, even had I been in any condition for absorbing abstruse ideas, I still wouldn't have been able to understand. Sharly alone had always been able to think and talk rings around me—and now she was Sharly-Plus. There was another mind there, an alien mind accustomed to dealing with alien concepts; and in company with it my Sharly had travelled far beyond the bounds of contemporary human knowledge.

All I knew for sure was that the Taker was squirming through into my part of the continuum, and the only way to stop it was to get the dismaying object that was Sharly's body into the field control room without any delay. I broadsided the Moke up to the base of the ramp on locked wheels, jumped out and gathered the body up in my arms. Again it slid one arm around my neck, but I was too

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far gone to notice much. I struggled up the ramp, crossed an area of deck, and opened a door in the superstructure and got inside. The companionways in the trawler were narrow, certainly not designed for the carrying of awkward loads, but I caromed my way along them, bursting doors open with my shoulder until we were in the rebuilt part of the ship, the area which housed the warp controls. In contrast to the spartan conditions elsewhere, this was a region of thick carpet and indirect lighting, with one large window giving a longitudinal view of the island.

"Over there," Sharly burbled in my ear, pointing at a long console before which were three swivel chairs. I lowered her into the nearest chair, only then becoming aware of a disturbing new facet of the situation. Until that moment I had been under the impression that my plunge from Level Three had left me with nothing but a selection of bruises and perhaps a fractured rib, but all at once there came the queasy suspicion that something inside me was ruptured and leaking. I had always purposely avoided medical knowledge and so was unable to make any kind of diagnosis, but there was a definite wrongness at the centre of my being, and its effects seemed to be spreading. Holding a stanchion for support, I examined my surroundings and found them curiously distant and unreal. Horizontal surfaces appeared to slope, and solid objects tended to shimmy.

This must be what it's like to faint, I thought, bemused. *Or perhaps this is the way you die!*

There followed a period of blurry confusion. I clung to the stanchion, internally preoccupied, and was only dimly aware of what Sharly-Plus was doing. It meant nothing to me that she was moving herself from chair to chair by the strength of her arms, or that she was using the same physical power to strip cover plates from equipment banks and doors from cabinets. Other forces were at work too, because I know I saw drawers slide in and out by themselves, saw looms of wiring change shape like live creatures, heard the crackle of high-voltage current, smelt the ozone and the hot metal. I was in the presence of things far beyond my understanding. For a time Sharly-Plus was superhuman, perhaps supernatural; and she was imposing her unearthly will on artifacts of this Earth, changing their relationships and functions, moulding them to suit her own purpose. Stray currents of psychokinetic energy rippled the carpet, sent papers skywards like flocks of startled birds, tugged at my clothing. The very air hummed and crooned and was disturbed by strange flitting shadows. All I could do was stand there and try to endure.

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The lull, the onset of silence, took me by surprise.

Fighting for a clearer picture of what was going on, I noted that Sharly-Plus, her head flung back at an unnatural angle, had ceased her labours and was staring at the window. I looked in the same direction and, in spite of all that had happened within and around me, I quailed.

The night-time scene was basically a familiar one—multiple rows of lights, flanking the helicopter pad and the STOL runway, converged on the accretion of greenish illuminated rectangles and points of brilliance which marked the head of the well shaft. The moon was too high to be visible from inside the control centre, but it sketched in a silver-grey background of ocean and cloud-vaulted sky pierced by stars.

And against that background something was moving. Something incredibly huge, and black, and with too many legs.

"Breakthrough . . . too soon," Sharly-Plus breathed. She reached towards a tilted and displaced keyboard on the console and began to tap instructions into it at high speed. At the far end of the island the Taker loomed high above the cranes and machinery houses, its legs slowly windmilling across the sky, quivering, questing. . . .

"Get away from here, Jack," Sharly-Plus said, or it may even have been Sharly, for in that moment her voice was almost human. "Take a boat and go fast."

I gaped at her back, nodded without speaking, then pushed myself away from the stanchion and ran, partially doubled over, for the ship's entrance ramp. Whatever it was that was damaged inside me reacted by producing spasms of pain, nausea, and weakness; and by the time I reached the bottom of the ramp I was sobbing aloud with every breath. It was only thirty yards to the jetty, but the crossing seemed to take a long time and all the while, at one corner of my vision, the night was hideously turbulent and alive.

I have no clear memory of reaching a boat, nor of starting the engine and casting off and heading out to sea. But in spite of being semi-conscious at the time, I can recall vividly what it was like when Sharly turned Icewell 37 into a miniature sun. I lay there, shielded by the gunwale, drowning in the sudden awesome wash of noon-time brilliance.

It lasted less than three seconds, but when it was over the icewell and everything connected with it—including the Taker and the mortal remains of Sharly Railton—had vanished in a mile-high column of fire and steam. Clouds of vapour were roiling upwards to the stratosphere, and circular waves were racing towards the ocean's

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distant shores with their message that a battle had been fought and won.

I lowered my head and wept till I lost consciousness.

They'll never believe me!

The words of the old song kept mingling and merging with my own thoughts, interfering with all attempts at lucidity. I lay in that hospital bed for the best part of a day, fighting off the drugs that had cushioned my nervous system during the excision of the spleen, and my principal concern was that nobody would give my story credence. It was the kind of inversion of priorities which is typical of the semi-lucid state. I imagined myself to be in the situation which crops up so often in children's fiction, the one in which all evidence of a fantastic adventure is maddeningly lost and the protagonist, if he speaks at all, meets knowing smiles of disbelief.

But I had forgotten about my buttonhole recorder.

It had continued working through the entire episode, and its tape became one of the single most valued artifacts in history, even though the evidence was imperfect in many ways. The Taker, for example, registered only as a vague area of darkness—with no sign of the legs which I had seen so distinctly; and the scene in Field Control was obliterated here and there because I had been clinging to the stanchion. However, the scientific and technical teams got most of what they wanted from it. They were able to see something of what Sharly-Plus had done to the warp control complex, to deduce others, and to make inspired guesses about much of the rest.

That was three years ago, and they believe that before another three have passed the first of the new breed of power stations will be operational. It will employ much the same equipment as an ice-well, but with the big difference that the zeta-locus, instead of wandering blindly in space, will be positioned exactly where we want it. Instead of serving as a heat sink for the construction of ice islands, it will be used to import unlimited energy from the vicinity of the sun.

Visionaries, and there are quite a few of them in the scientific community, say it won't be too long until we achieve the reciprocity that Sharly used to talk about, that an advanced form of the tele-congruency warp is going to give us instantaneous travel to the stars. As Sharly once put it, "We'll be able to grow food or gather diamonds or pick flowers on any planet in the Galaxy."

I guess that's the sort of memorial she would have chosen for herself.

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THE SF CONVENTIONAL CALENDAR
by Erwin S. Strauss

Sixteen con(vention)s are coming up in the next two months, culminating in the Denver WorldCon over Labor Day. Get out for a social weekend with your favorite SF authors, artists, editors and fellow fans soon. For a longer, later list, an explanation of cons, and a sample of SF folksongs, send me an addressed, stamped envelope at 9850 Fairfax Square, Fairfax VA 22031. The hotline is (703) 273-6111. If a machine answers, leave your area code and number and I'll call back at my expense. When writing cons, enclose an SASE. Look for me at cons behind the big Filthy Pierre badge.

Archon. For info, write: **Box 15852, Overland MO 63114.** Or Phone: **(314) 781-7793** 10 am to 10 pm only, not collect). Con will be held in: St. Louis MO (if location omitted, same as in address) on: 10-12 Jul., 1981. Guests include: Tanith Lee, Joan Hanke Woods, C. L. Grant, Joe Haldeman, Geo. Alec Effinger, W. (Bob) Tucker, G. R. R. Martin. Masquerade.

AutoClave, 16594 Edinborough Rd., Detroit MI 48219. 24-26 Jul. Big-hearted Howard DeVore.

FairCon, 200 Woodlands Rd., Glasgow G3 6LN, UK. 24-26 Jul. John Brunner, fan Ken Slater.

NECon, c/o Booth, 67 Birchland Ave., Pawtucket RI 02860. Bristol RI, 24-26 Jul. Peter Straub, Les Daniels, Pete Pautz. $50 for single room, board and registration at Williams College.

ParaCon, c/o Casto, 425 Waupelani Dr. #24, State College PA 16801. 24-26 Jul. Wm. Tenn.

WichaCon, 211 N. Oliver, Wichita KS 67208. 24-26 Jul. Theodore Sturgeon, W. (Bob) Tucker.

RiverCon, Box 8251, Louisville KY 40208. 31 Jul.-2 Aug. Sunday afternoon riverboat cruise.

BecCon, 191 The Heights, Northolt, Middlesex, UB5 4BU, UK. Basildon, UK, 31 Jul.-2 Aug.

August Party, Box 893, Silver Spring MD 20901. Rosslyn VA (near Washington DC), 7-9 Aug. After a year's rest, this most fannish Star Trek convention picks up where it left off.

MythCon, 90 El Camino Real, Berkeley CA 94705. Oakland CA, 7-10 Aug. Elizabeth Pope, Joe R. Christopher. 12th annual Mythopoeic Society high fantasy (e.g., Tolkien) con.

StuCon, c/o Mecker, Eichenweg 24, D-7016 Gerlingen, West Germany. Stuttgart, 14-16 Aug. Marion Zimmer Bradley, Cherry Wilder, David A. Hardy, Helmut Garbiel. German Nat'l con.

Tolkon, c/o SU Tolkien Soc., Box 272 Wentworth Bldg., Sydney U. NSW 2006, Australia. Auckland, New Zealand, 21-24 Aug. Peter Jon Noble. UniCon 7. Not connected with US UniCons.

B'hamaCon, Box 57031, Birmingham AL 35259. (205) 252-4515. 28-30 Aug. Bob Shaw, Gerald Page, Hank Reinhardt. The 19th annual DeepSouthCon. 24-hour party room, Hearts tourney.

BuboniCon, c/o Virzi, 429 Graceland SE, Albuquerque NM 87108. (505) 265-2787. 28-30 Aug.

HillCon, c/o Zee, Sneeuwgans 6, 3435 DK Niewegeins, The Netherlands. Rotterdam, 28-30 Aug. Jack Vance, Kate Wilhelm, Peter Coene, Gerard Suurmeyer. The eighth annual BeNeLuxCon.

Denvention II, Box 11545, Denver CO 80211. (303) 433-9774. 3-7 Sep. C. L. Moore, C. Simak R. Hevelin, Ed Bryant. WorldCon. $45 postmarked by 15 Jul., or $55 at the door.

UniCon, c/o Bridge End, Shawbury, Shrewsbury, Salop., UK. Keele Univ., 11-14 Sep., 1981. John Sladek, Alan Dorey. Yet another UniCon, not connected with US or Down Under ones.

WesterCon 35, Box 11644, Phoenix AZ 85064. (602) 249-2616. 2-5 Jul., 1982. Gordon Dickson.

ChiCon IV, Box A3120, Chicago IL 60690. 2-6 Sep., 1982. A. Bertram (Rim Worlds) Chandler, Kelly Freas, Lee Hoffman. The 1982 WorldCon. Go to other cons to prepare for WorldCon.

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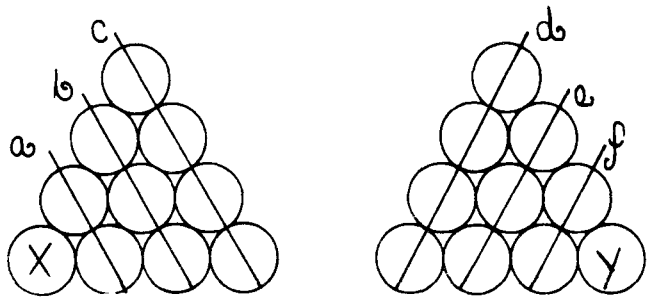
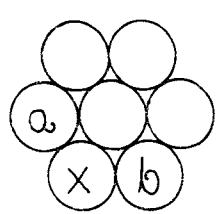
SOLUTION TO THE BALLS OF ALEPH-NULL INN
(from page 64)

Here is one way to prove that balls 1 through 10 cannot form a magic triangle. Suppose there is a solution, then consider the following diagrams:



On the left, slanting rows a, b, c must each have a sum that is one third of the total of numbers on the nine balls that form these three rows. This sum is clearly equal to 55 (the total of all ten numbers) minus the number on ball x, and the result divided by 3. Expressed algebraically, the constant is $(55-x)/3$ on the right, for the same reasons, the magic constant for rows d, e, f must be $(55-y)/3$. Because the magic constants for both diagrams must be the same, we are forced to conclude that $x=y$. But x cannot equal y because each ball has a different number. Therefore our original assumption is false. We have proved by reductio ad absurdum that no magic triangle of numbers 1 through 10 is possible. The proof generalizes in an obvious way to triangles of any size.

After Yin explained her proof, the two children decided to investigate hexagonal patterns. First they tried a pattern of balls 1 through 6, but they quickly saw that this had no solution.



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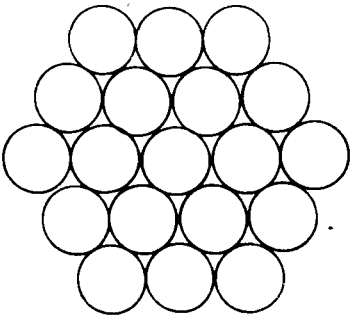
A corner ball in the above pattern, such as the one marked x, belongs to two rows of two balls each. This would require that balls a and b have identical numbers to give the two rows the same sum. Yin and Yang next turned their attention to the 19-ball pattern shown below.



Several hours later they found a solution. That night one of their parents, a mathematics teacher, told them that not only was this the only possible solution (not counting rotations and reflections as different), but that no hexagon of any larger size could be magic. This is not true of magic squares. The larger the square the greater the number of solutions. A magic square of four-by-four (numbers 1 through 16) has 880 basic solutions. In 1973 a computer program found that there are 275,305,224 basic magic squares of five-by-five. The number of six-by-six magic squares is so enormous it has not yet been determined. Yet for magic hexagons, regardless of size, there is just one specimen!

Your problem is to put numbers 1 through 19 in the cells so that every row of three, four, or five cells, in any direction, has the same magic sum. The sum is 38. This is easily obtained by taking the sum of numbers 1 through 19, which is 190, and dividing by 5, the number of parallel rows in any direction.

It is a formidable task. You are urged to work on it for a while with numbered pieces of cardboard before you give up and turn to the solution on page 102.

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MAGIC, THE SEA, & OUR CONFERENCE IN AVERNUS

by J. P. Boyd
art: Tim Kirk

The author works in Atmospheric Sciences at the University of Michigan, having just completed a year of research at Harvard University. Since his work is in both stratospheric and ocean waves, it can be both out of this world and all wet—simultaneously.

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Department of Atmospheric
and Oceanic Magic
Unearthly Thaumaturgy Building
University of Michigan
Ann Arbor
4/1/81

Dean Rollo Caspar
Department of Crystal Prophecy
University of Newcastle-upon-Tyne
#14 Street of the Dragon

My dear Rollo,

It was the first conference I had ever attended in Hell, and it was a smashing success. (The towers, I mean, not Victor's alchemical reputation. But more of that below.) And I learned a quotation from the famous theo-cartographer Isaac Newton, too. I quite understand your feelings about meetings of sorcerers and thaumaturgical congresses—the travel can be very taxing. A thousand leagues in the bowels of a sea serpent—really! But I've been told that Atlantis is very pleasant when a mid-ocean gyre is passing over.

Still, Rollo, one must keep up with it because nothing is more stimulating to the powers and energies of an academic sorcerer than contact with one's fellows. Why even after my most recent meeting—but perhaps if I tell you about that, it will shake you out of this unseemly gloom.

It all began when the ghost of Macaddlewise visited me in my office. A few months earlier, he'd been a bit careless and had been devoured by the jaws and mandibles of a graduate student he'd shut in a bottle. Macaddlewise took it rather well, even when the university awarded the boy his Doctor of Black Arts degree (after turning the boy back into a human, of course—out of the bottle, he had been a ten-foot-long cockroach), but he became restless and gradually got back into magical research.

"Damnation can be mighty boring, I can tell you," he said feelingly in my office. Like most ghosts, he was sensitive about his translucence and was sitting well away from the window. In the shadow, he looked rather life-like.

"Well, at least you can travel a lot."

"Hmm, yes." Even he had to admit that was one of the advantages of post-mortal life. Since he had died violently, he could of course haunt any location he had known in life, and since he had had the

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foresight (or sheer gall) to visit most terrestrial and even some astral universities while still in the flesh, we had all got used to him popping into our offices at frequent intervals. Even so, he was unhappy.

"Why can't we have a meeting at *my* place?" Ah, that was the real complaint. Of course, it was merely silly pride. For our last meeting at Harry Hobwinkle's institution—M.I.T.—Harry used a dilation spell to fit us all into a filing cabinet drawer he'd borrowed from a colleague in the English department, who had recreated the paradise of the tenth-century Mohammedans inside it. (An indispensable aid in studying the imagery of Moore's poem *Paradise and the Peri,* I was assured.) Almonds and honey and an houri leaning on my shoulder with her long dark hair in my lap—most delightful, and I thought it was rather boorish of my colleagues to object to the lack of fermented spirits in an Islamic Eden. (I, of course, am an abstainer.) So, our meeting was at M.I.T. only in an abstract sense, and you can't work such pleasant recreational magic in Avernus.

"But it's only the Nether Hell. Now if it was the Buddhist Hell of the Eight Fierce Demons or the Hell of the Five Deserts of the Fire, I could understand, but merely cis-Lethean Avernus—"

"All right, all right." He was most insistent, and being always a believer in the spirit of fellowship and good feeling, I agreed that I wouldn't oppose the idea. A few months later it was all arranged.

The descent to Avernus is easy, as noted by that Roman fellow; and I went by way of the ale cellar of the Blue Dragon tavern in the central campus area. It is widely thought, of course, that public houses which cater principally to students are very near the infernal indeed; but here at Michigan, I believe our young scholars are *most* well-behaved (except on football weekends, of course). Nonetheless, I am sympathetic with the owner's reasons for giving the cellar a prominent place in his advertising. The young people do like to have the proper atmosphere for their dancing, and the tongues of flame and howls of the damned that periodically erupt through the open door are a most appropriate accompaniment to the contemporary styles.

After I had walked down a long ways through the dripping, lichen-and-niter-covered walls of the cavern, lit only by my torch, I came upon a fiend of one of the lower orders. Baring his fangs politely, he pointed with his tail in response to my question; and after a long safari in the dark which I rather enjoyed (for you know that I am a great walker), I came to my goal: the infra-world accelerator built by the Division of Applied Sorcery at Harvard. Several colleagues

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were already waiting there, discussing a problem.

Moghan Blindwine was holding up a graph on semi-intelligent parchment.

"You see, Ettazzo, Trevor and I both predict a wave-focusing effect in the Bering Sea. Next page, please." The graph on the parchment obediently rearranged itself into another (I so admire a man who's polite to parchment) and he continued. "Now this shows what happens when someone's raised a mist spell over the eastern Pacific."

"Yes, yes, Moghan, but do you know how much effort it takes to make a new buoy? First, the 4,000 runes of the sea on the brass drum and then the pattern of the mooring spell embroidered in blue sapphire, and that's only the outer casing—"

"But how else—hello, Abbott."

I was used to the arguments. Poor lads, I am most thankful that I am primarily a sorcerer of wind rather than brine, for the vastness of the sea doth confound them most grievously. Even with new buoys that record the magical and natural fluxions of the currents directly on mnemonic honey, which can then be painted onto semi-intelligent parchment for analysis, there are never enough to ensorcel more than a tiny area of the seven oceans. But they were so cheerful that it was obvious that this particular tribulation had been swept away by their excited anticipation of going to Hell.

"Aren't you worried about the flames of the infernal?" I asked sternly.

Ettazzo grinned. "But they're astral flames. Can't feel them in the flesh. If you could, do you think anyone would ever be damned?"

Having seen Ettazzo at work among the fair flowers in the streets of his native Venezia, I was not so sure.

I harrumphed and looked up at the infra-world accelerator, a great spiralling horn of star-ebony inlaid with millions of runes in heliophagic gold. "Well, let's be off." And so we walked into the bell of the horn and emerged into the great hall of a vast, many-towered castle.

When we were all together, the maître d' made the usual sort of flowery welcoming speech. He had two wings, two horns, a short, barbed tail, and imperfectly cloven feet: a standard specimen of the lowbrow sort of infernalist. I whispered to Moghan that the place still looked like a castle, but the fallen one's pointed ears picked it up.

"Quite correct, my dear Dr. Longsword. We here in the nether hell caused its erection so that we could provide medieval knights and creative Inquisitors with a taste of delight—" He gestured to-

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wards the torture rooms below. "—before passing them on to lower kingdoms of the infra-world. But we get no more of that tribe, and so this charming edifice is available for happy occasions such as this."

He beamed. "I am Asmodeus. Please feel free to come to us with any problem."

As he left, I grumbled to Moghan. "Notice that he didn't give his rank? Probably a Blasphemer, Third Class." In hell, every being has his place, and most take great pride in their rank in the infernal hierarchy. But Moghan only laughed.

I was partly mollified by the lavish banquet and Macaddlewise's individual survival kits, which were crammed with all sorts of trinkets. The maps and ratings of taverns, gambling dens, bawdy houses, and other locales of innocent amusement were very useful, of course; but I was especially impressed with the large medallions. These were stamped with a coat of arms bearing the motto **The Hell with Style** and the legend **Avernian Chamber of Commerce.**

The meeting itself was quite routine. (Except for poor Victor, of course.) We argued about the magic of the oceans and the sorcery of wind and waves all day and partied merrily all night. I suppose to the casual observer, the two might be unconnected; but in reality, a hangover lies at the heart of true scientific debate. Good ale loosens the tongue, red-light women the passions, and gambling provides an intimate reminder of the stochastic and unpredictable behavior of fluid mechanical turbulence. It also makes one mad enough to kill. All this creates that atmosphere of hostility, one-upmanship, and criticism which winnows truth from falsehood like fire distilling the soul of mercury in an alembic.

My own talk on solitary waves went very well although Macaddlewise objected to the six rings of selenic silver I had slipped over my wand to demonstrate my spell.

"Why six? Wouldn't two be enough?"

"Yes, but I have six so why not—what does that have to do with anything?"

"Nothing, but I've been giving everyone else a hard time, so why should you be different?"

I nodded agreement, for fairness is after all the very essence of science.

The only other interruption was when I saw the sprite of the solitary wave, who was confined in a small glass box full of water, shaking his little fist at me. I bent down and pressed my ear against the glass.

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"Oh, yes, thank you for reminding me." I smiled at the audience and put his box against the huge sheet of semi-intelligent parchment that covered the blackboard.

"Now when the trade winds over the Pacific change rapidly by a large amount, the solitary wave receives almost all of the energy and the oscillatory wavetrain that trails it is very small."

The parchment finished listening to the wave sprite, shrugged its corners (well, it could hardly shrug its shoulders!); and the black curve rearranged itself into a single large hump with a few almost invisible wiggles to its right.

"Thus, while solitary waves—" I gestured to my little friend in the box. "—are not everything, they are sometimes the only thing."

While I received the applause of my peers, the little sprite bowed deeply and then raised his arms over his head like a candidate receiving the will of the people.

When I mailed him home to the sea, the maître d' Asmodeus assured me that I had used sufficient postage.

"But does the postal service have connections here?"

"My dear Dr. Longsword, why do you think a letter takes three weeks to pass from one side of your Ann Arbor to the other?"

No wonder my last letter from you was a bit singed.

Poor Victor probably wished he could have mailed himself home, too. Six different talks were presented on the wave lense spell, which I thought excessive; but Moghan had a ready answer that evening: "It is easier to create wisdom, like intoxication, with six drinks than with one." Actually he'd had far more than that at the time, and he bruised himself most severely when he dove off the parapet without remembering that a levitation spell won't work here, but he nonetheless enunciated a great truth. Poor Victor's troubles began when he tried to compare all these spells together.

"Mnemonic honey, or 'bee's wisdom' as it is called abroad. Marvelous stuff. With it, the poor little bugs are capable of the complex waggle dance to call their fellows' attention to the location of fresh nectar, and to organize a civilization almost as intricate as our own."

He shook the beaker slightly. "I have borrowed a few drops from the results of myself and the other five participants and added a tincture of infant's tears, which powerfully invokes the spirit of cooperation in all things living and magical. And now a bit of armistice jelly—" He shook the beaker again. "—made from the bouquets and flower arrangements at the treaty-signing that ended the War of the Tulips, and soon we shall see how they stack up against one another for ensorceling the great waves of the sea."

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Ettazzo looked very thoughtful. "Victor, are you trying to use Tarnheim's Spell of the Five Stout Cooks?"

"Well, yes, this is a liquid and—"

"But it inverts outside the terrestrial sphere. You'll make—"

Moghan jumped to his feet. **"Vesuvium fulmen!"**

At the mention of one of the most powerful magical combustibles known, we all looked at one another for a moment and then leaped for the doors.

Victor turned glazed eyes on his beaker, which was now ominously bubbling; laid it down gently; and then leaped through an arrow slit into the moat.

The explosion demolished only an unimportant watch-tower and the stone meeting-hall beneath it, and Asmodeus was very philosophical as he arranged for another conference room.

"Think nothing of it," he said as he adroitly swished his tail out of the way of some late-falling masonry. "After all, havoc, smoke, and Armaggedon are our business."

But poor Victor hid in his room that night and would not say a word for the rest of the meeting.

The last night of the conference, I was in a tavern just inside the outer ring of the fortress, making some notes in a leather-bound folio and sipping a ginger fizz. Moghan was sitting next to me with a succubus on each knee. In his youth, he had been known primarily as a drinker; but since the most recent of his six wives had left him for a flying carpet salesman from Old Duluth, he had been diversifying with great panache.

Trevor Gordwhistle staggered up and began serenading us with an old Scottish drinking song. Ettazzo joined in on the second chorus.

When they were finished, Ettazzo looked down at me, belched, and uttered a string of seven curses each more violent than the last. "Come on, Abbott, join the party."

I manfully continued writing, pausing only to refill my quill from the inkpot.

Trevor giggled. "Say 'oh heck,' Abbott. Come on, I dare you."

My point broke. "Rats!"

"Close enough. Hurrah! At last, you're really one of us. You—"

But Trevor was not allowed to finish. The maître d' Asmodeus burst in panting.

"Run for your lives! Flee! A mob is coming to storm the castle. They're jealous of—"

But he didn't get to finish either because he was knocked flat by a ten-foot-high mass of wings, fur, and claws known as a hornsmith,

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followed by a werebear; three fiends; and an uncountable number of goblins, demons, and assorted of the damned. Within seconds, the carousing had degenerated into a general free-for-all. Moghan was knocked off his chair by a weretiger while his succubi snuck off squealing; Trevor disappeared under a mass of half a dozen rather seedy-looking sinners; and Ettazzo, after blinding the hornsmith with his drink, had dived behind the bar where he was going at it hot and heavy with two winged demons and a three-foot-high goblin.

Since this didn't have anything to do with me, I took a new quill out of my black bag and resumed writing. I have always prided myself on my powers of concentration, so I was able to write steadily, scratch, scratch, in spite of the horrible din around me. I must confess I was distracted occasionally, however. Noticing that Moghan was rolling around on the floor with two sinners around his neck and a what-is-it on his ankles, I picked up his drinking mug and delivered three smart blows. The sinners lost all interest in the proceedings, but what-is-its are very hard-headed, so I tossed the mead in its face and it melted. Moghan smiled and then was immediately tackled by the hornsmith.

A chair sailed over my head with Vernon ap Badgnasher still attached to it. A drinking mug floated across the room, remembered that it was *not* supposed to obey recreational enchantments in the infra-world, and dropped right on the head of a four-winged fiend who was trying to bite Trevor's head off. A leg and several miscellaneous claws flew past me as a dismembered demon reconstituted himself. Despite these minor interruptions, however, I had little trouble finishing my reflections on the conference.

When I finally looked up, the tavern was empty and the archangel Haridantius was sitting on the remains of the bar.

"Hello, Harry."

"Hello, Abbott." He looked exceedingly bored. He was rather a romantic at heart and loved massive phalanx-to-phalanx combats with the legions of the Dark One, but since Adam's peccadillo he had been a sort of nanny with wings.

"Why is it that no matter how much vice, violence, and iniquity surrounds you, yes, even Hell at war with itself, you're never in the least affected?"

"Well, it is said that angels protect children and wise men."

"Not true. Have to watch everyone. But I admit you're doubly qualified."

I heard shouting outside the window and looked out. One tower, totally engulfed in flames, was just falling over. The shock of its

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landing shook the whole tavern like a giant earthquake. The central keep and several subsidiary towers were burning, too. Moghan was running along the inner parapet with that remarkably persistent hornsmith in pursuit.

"I suppose I'd better be running along, Harry. What caused all this?"

"The enlightened proletariat rejecting the decadent values of the bourgeois. Actually, the Chamber of Commerce was using all the good real estate around here for high-powered tempting, and the lower orders became envious."

"My goodness. Even here in Hell, everyone is jealous of everybody else's good fortune."

"That is rather the point. But don't worry, I'll see that all your friends get out, even Macaddlewise."

"But I thought—"

The archangel sighed. "We have such an overflow in Purgatory that we've had to stash some of them here. He'll be eligible for upstairs in another thousand years or so. After all, it's a professor's privilege to torture his students."

I nodded vigorously although I have no students myself. It is important to uphold academic tradition in a time of changing moral values.

"The Big Fellow has been really soft these past two thousand years. You know, you would think that a lad who could create the Sun and the stars and all the hierarchy of Heaven and Earth could do mathematics, too; but since that business in Galilee, he just hasn't been up to snuff."

I sympathized. My colleagues in the theology department have been trying to come to terms with His creative bookkeeping for a long time, and it still confounds them.

"And your group—" He sighed. "None of them will ever belong *here*."

I raised my eyebrows. Were not my colleaggues all rather inebriated at the moment?

"Quite irrelevant, old boy." He yawned. "Have you ever heard of Isaac Newton?"

Well, really! I was *most* insulted. "The founder of theo-cartography whose brilliant synthesis of the Bible with Renaissance magic and divination mapped the infra-world for the first explorers a century later?"

"Hmm, yes." Harry pulled a book from his sleeve and put on his reading spectacles. "In summing up his life, he said, 'I do not know

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what I may appear to the world, but to myself I seem to have been only like a boy playing on the seashore . . . whilst the great ocean of truth lay all undiscovered before me.' "

He closed the volume, whose cover was stamped in gold *The Oxford History of Theo-cartography*, and replaced the bookmark.

"Don't you see? You only more than the rest, Abbott. There is one group of you annoying nuisances for whom He has no resistance at all."

I thought about the week past, the good times we had shared, the jolly fellowship that was ours as each of us built our sandcastles along that vast "undiscovered ocean of truth," and of how much I loved both it and them, and I understood.

I learned a deep truth from Harry—I so admire scholarship in an archangel—and thaumaturgically it had been a most satisfying and useful conference. So do take heart, Rollo, and keep travelling. And remember what, in His words, Harry reminded me: "Unless you become as little children . . ."

Magically yours,
Abbott Longsword

MODERN PYTHAGORAS

Moonishly, toonishly,
Dreamy Pythagoras
Sang of the cosmos's
Mute harmony.

Were he a modern, he'd
Characteristically
Think Saturn's disc was a
Cosmic LP.

—William E. Nilsen

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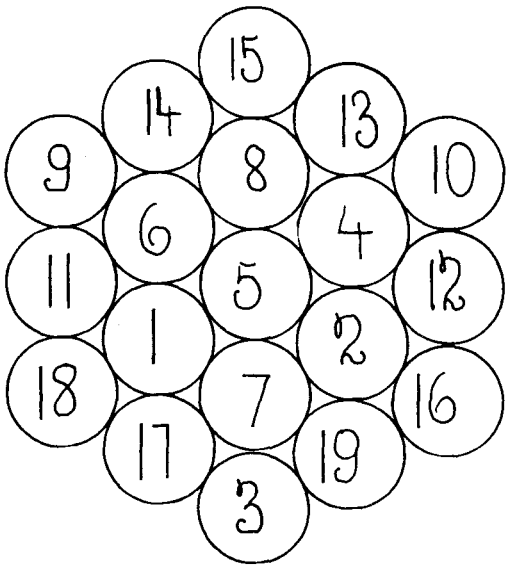
SECOND SOLUTION TO THE BALLS OF ALEPH-NULL INN
(from page 91)



This amazing pattern was first discovered in 1895 by one William Radcligge, a teacher at the Andreas School on the Isle of Man. He patented his "38 Puzzle," as he called it, in 1896 in England and the United States, but was not successful in marketing it. Sixty years later it was rediscovered by Tom Vickers, who published it in *The Mathematical Gazette,* Vol. 42, December 1958, page 291. Not until 1963 did Charles W. Trigg, of San Diego, California, prove the solution to be unique, and that no other hexagon, of any size, can be magic.

The pattern has no earthly use, but surely it is a thing of strange and subtle beauty.

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HIGHEST HONOR
by Hank Simpson

The author tells us that he has jumped from a plane five times, ridden eight bulls, seen a rainbow around a full moon, and petted a live tiger. He's now 27, and this is his first sale.

Frill, in charge of the preparations for the official ceremony, was terribly worried. "This is Emperor Bem we're talking about!" he shouted at his seconds. "His race has this almost inbred demand for ceremony and, among them, he is the greatest of heroes, the most deserving of ceremonial honor. It has taken years of effort to arrange this meeting, and I tell you gentlemen, it will be pivotal in the Truce Talks!

"There will be thousands of dignitaries and reporters in his party, and every *one* must be completely satisfied that we have accorded to him all due honors. We've got to go all out to find the one thing that will do the trick. If we blow this thing we will have war until the last fanatical one of them dies. Or," he gazed around at them, "the last one of us."

A smooth-faced youngster leapt up. "How about a massive display of firepower? We could have the entire fleet scream overhead at the proper moment and simultaneously fire all their laser cannon. Hey! We could tow a big asteroid into orbit and blast it to cinders. Pow! Impress the hell out of them, for s—"

"No!" screamed Frill as he found his voice again. "This is a Peace Delegation, you idiot! We've worked for years to get them to the treaty table, and you want to shove guns in their faces?"

"Don't worry, Boss," broke in Drek, one of the more imaginative of his seconds. "This very minute there are hundreds of scoutships combing the outer edges of known space, searching for something spectacular with which to honor the Emperor. We're in constant contact with them and expect something to turn up any time."

"Well," growled Frill, "for the sake of our entire race—and our jobs, too—I hope it does."

Emperor Bem stepped off the Imperial Flagship and surveyed the amassed spectators. There were two huge fields of them: his own people to the right, others to the left, and between them a broad

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avenue which led to the Hall of Peace.

Frill made a short speech about how difficult it was to adequately honor the Emperor, but how the scoutship crews had risen to the occasion with a splendid effort that demonstrated their supreme respect for His Exalted Majesty. They had found a new planet called Earth and, landing in a place called Texas, had immediately spied a dusty rancher surrounded by several of his many male offspring.

They had brought the lot of them at top speed, and had arrived only a short time before. And now they were to be presented to His Wisdom.

Emperor Bem stood regally tall and proud as the Earthlings were marched to the steps of the Royal Platform—the rancher in the lead, followed by his surprisingly numerous male offspring in the Configuration of Honor: three lines of seven each.

The offspring, flanked by the Honor Guard, stopped at the bottom of the steps, but the rancher continued up them, his spurs jingling, chaps flapping, and wide-brimmed Stetson hat bobbing as he ascended.

The crowd noises suddenly hushed as he reached the Platform, and the Emperor's people glared with critical attentiveness as Frill completed the presentation.

In a second, though, they relaxed. Even the most prickly of ceremonial sticklers could see that the honor bestowed was, for such a one as Emperor Bem, indeed fitting: a twenty-one son galoot.

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AWAY FROM IT ALL

by Joanne Mitchell
art: George Barr

The author is a Cub Scout den mother and likes to canoe. Her first SF sale, "Heritage," appeared in the March 1980 issue of this magazine.

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Lou Garew pulled his car into the parking lot beside the lake and stopped. He bent forward and rubbed the tense muscles at the back of his neck. Seven hours of driving was a tiring way to start a vacation, but it would be worth it. If he'd had to spend another day caged up in that windowless office he would have quit, just to get away.

Lou's stomach reminded him that it was well past noon and he hadn't had anything to eat since a cup of coffee and a stale Danish at 9:00. He reached into the back seat and rummaged in the cooler. Pulling out a thick roast-beef sandwich made exactly as he liked, with rare meat and no seasonings, he wolfed half of it in just a few bites. With the other half of the sandwich in hand he left the car and strolled down to the water's edge. Ever since he had crossed the boundary of Ontario's Algonquin Park he had been aware of a mounting excitement. Now that he was finally at the starting point, he felt a sweet pleasure in prolonging his anticipation.

"Nice scenery, isn't it?" a deep voice rumbled. A stocky, sunburned man stood by Lou's elbow, smiling genially. "I saw you arrive. That your boat?" he asked, indicating the dark green, 15-ft fiberglass canoe on top of Lou's car. "She's a beauty. What does she weigh?"

"Fifty pounds," Lou answered, irritated at the interruption.

"Nice! You going into the interior by yourself? For how long?"

"Two weeks."

The man's face registered envy. "Wish I could try that." He sighed. "Maybe when my son is a little older I can do what you're doing. I just came by to rent a canoe to take the wife and kids for a ride." He gestured at the busy dock to their left, where rental canoes were stacked high. "You're lucky. Been up here before?"

"Yes." Lou's feelings burst through the dam of his indifference to the stranger. "Every so often I've just got to get away. I've just got to get off in the woods and be alone, be myself. I feel so trapped in the city sometimes."

Although startled by Lou's emphasis, the man nodded. "This is a great place to unwind, all right. We come camping here every year. We go on little hikes, and the rangers give lots of interesting talks about nature. Say, speaking about rangers, did you know there is a Wolf Howl tonight?"

"A Wolf Howl?"

"You don't know about the Wolf Howls? You did know there are a couple hundred real honest-to-goodness wild timber wolves in the park, didn't you?"

A wary expression flickered across Lou's face. "Yes, I know about

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the wolves."

"Well, every August the rangers hold a couple of Wolf Howls. They aren't always successful, but we've been lucky when we attended. They start with a slide show about wolves in the outdoor amphitheater to the east of here. Then everyone gets into their cars and the rangers lead us to an area where they think a wolf pack has been living. The time we went last year there must have been four or five hundred people along."

"Five hundred people?" Lou said in horror. "How can you have a wilderness experience with five hundred other people?"

The man shrugged. "Anyway, when we got to the place on the road where they stopped us, everyone just stood beside their cars quietly. Then one of the rangers howled like a wolf. You know, *ooo-ooo-ooo!* We all listened, and darned if the wolf pack didn't howl back from maybe just a mile or so away. You could hear several grown wolves howling, and some of the pups were sort of yipping along with them. I tell you, it sent shivers up and down my spine. Where else do you ever get a chance to hear wild wolves howling? It made me feel . . . free."

"Yeah," Lou agreed. "Wolves have that effect." He finished his sandwich and tossed the wrapper into a trash barrel. "I'm going to be out on the lake tonight, so I'll have to pass on the Wolf Howl. Have fun."

He glanced toward the portage store, but decided he didn't need any more equipment. Last year on his annual trip he'd looked into the store. Freeze-dried lasagna and dehydrated apples. Yuck! If his plans worked out he wouldn't be eating any of that garbage.

Lou strode to the small office beside the lake. He filled out forms giving his proposed route and paid the nightly camping fee required. He emerged holding the white form to be left on the dashboard of his car in one hand and a large, bright-yellow plastic litterbag in the other. It was necessary, he supposed, but it certainly did take the adventure out of it.

He drove the car across Highway 60 to the public dock on Smoke Lake, where his trip started.

The water was smooth and calm, mirroring the clear blue sky. After a few minutes Lou's muscles settled into the steady paddling rhythm he could keep up for hours. Cottages dotted the shoreline of Smoke Lake, but once he had passed into the next lake he knew he would see no more buildings until he came out. A loon suddenly popped its head out of the water only a few feet ahead of Lou's canoe,

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looked startled, and immediately dived under again. Lou threw back his head and laughed. He already felt an easing of the tensions that had driven him for days.

His father had been just like him, Lou remembered. He would sometimes disappear into the woods for days at a time, returning home guiltily to a tight-lipped wife and a bewildered little boy. Until the day he hadn't returned at all. Not for a long time had Lou understood the forces that drove his father. Not until he himself had felt the same urges and needs emerging in him as he matured. "It must be hereditary," he'd told his mother with an attempt at a smile. She never understood, but then how could she be expected to?

The south end of Smoke Lake was in sight now, and the portage around the dam was clearly visible. The four miles had gone quickly.

Lou pulled the canoe onto land and swung his backpack onto his back. Then he easily hoisted the canoe to his shoulders and set out along the path.

A family group wrestling with packs and paddles and other gear looked at him wistfully as he passed. "You travel light," one of them commented. He grinned in agreement.

He paused at the end of the 200-yard portage for a handful of gorp, relishing the crunch and salty-sweet combination of peanuts, raisins, sunflower seeds, and chocolate bits. After gulping a drink from his water bottle he set out on Ragged Lake.

The silvery full moon was glimmering faintly in the late afternoon sky. Lou kept glancing at it as he paddled. A new urgency was beginning to drive him. He was sweating heavily by now. Pausing to remove his shirt, he tied the sleeves around the thwart and continued.

Some of the island campsites on Ragged Lake were beautiful, but of course an island would be completely unsuitable for what he had to do. There was a campsite a few more miles along that would be ideal for what he wanted. He thought he could locate it again, and hoped it would be unoccupied. It was on the eastern shore of the lake, necessary because he would be sleeping late in the mornings and wouldn't want the morning sun. It was heavily wooded, too, and the clearing for the tent was set away from the water. He certainly didn't want any curious passers-by checking on him.

Ah, now he could see the orange sign on the tree that marked the site. He was in luck. The site was deserted, and there was no sign of activity at the other campsite barely visible across the bay. The sky was deepening to a rich, heavy blue; the moon was glowing, ripe and round. Lou stumbled as he hauled the canoe ashore, clumsy

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with haste and eagerness.

It took him twice as long as usual to set up his small tent. His hands were shaking so hard he could barely fit the sections of pole together. As he tossed the sleeping bag into the tent he searched for the moon again. It was brilliant in the deep blue evening sky, hanging just at treetop level.

Sweat dripped from him as he kicked off his shoes and dropped his jeans. The cool evening air felt good on his bare skin. He stood for a moment while violent sobs racked his body. Then he fell to all fours and let the change flow over him.

At peace, finally, he sat back on his hind legs and licked at his fur. The tensions of the past weeks had vanished, and he felt like a cub again. The top of the moon still showed above the trees. Lou felt like frisking and singing from joy.

Maybe he would go to the Wolf Howl tonight, after all.

HONEST APPROACH
by 79116

Higgledy, piggledy,
George Scithers, Editor:
Here is a dactylic
Ditty for sale.

O.K.—it's pointless, and
Unsciencefictional . . .
Gimme a break, pal, I
Gotta make bail!

—William E. Nilsen

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THE DUST

by Somtow Sucharitkul

art: Karl B. Kofoed

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The dust came first: dormant, unstirring, hugging the hard crust of Aëroësh for an eon or more. The tempests that had ground it out of the stone were forgotten; now, weather-shifts later, the winds were stilled and the heat stifling and rasp-dry.

Time-frozen, blood-dyed by the red sun that Aëroësh circled, the dust ocean stretched from eyes' end to eyes' end, crimsoning with distance and melting into brown-red sky.

From the earliest times the thinkhives of the Dispersal of Man had known of Aëroësh, but had deemed it too distant and too inhospitable for Man. . . .

In time came disturbances, tugging at the power of the Inquest. The Inquestors moved planets to make room for a war. And the people bins went out, towed by convoys of delphinoid shipminds that pinholed through the overcosm beyond realspace, each one of them stasis-stacked with the survivors of murdered worlds; for in its compassion the Inquest was compelled to save what people it could. And so men came to Aëroësh: scavengers, dispossessed, clanless, despairing. Their cities sprang up from the rockface under the dust, domed with forceshields, linked by klomets of burrow-tubes. They were fragile bubbles of humanity, buried in the soundless depths of the dust-dead sea.

And then Aëroësh changed. Surges of power erupted from the cities. The dust rippled. The forceshields hummed. The ion wind came, and the dust woke at last, in slow spiralling storms a thousand klomets broad, gusting, sweeping the plains, like an army without a foe. There were no mountains to scour, no people to eat alive. The storms were impotent.

And the people of Aëroësh were untouched by them. They lived far down, in the cities with skies of dust. At times they forgot that the rest of the human race existed.

In turn, they were ignored. The Inquestor who

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ruled Aëroësh held sway over a dozen worlds; he never came. There were no visitors . . . for what did the planet have but dust? And who could love the dust?

The dust waited, gusting in darkness and light.

The palace! A dance of golden spirals and glitter-burnished spires, easing into orbit around Alykh, the pleasure world. And there in the throne room tiled with azurite and ringed with columns of cold blue flame, the Princeling Elloran, Inquestor, Hunter of Utopias, and Lord of Varezhdur and all its Tributaries, watching the crescent of Alykh burning in the blackness and listening to the cool music: flutes, watergongs, whisperlyres, shimmerviols.

He too was watched. Shen Sajit, master of the Prince's music, reclining against the curvewall of the sunken orchestra pit, was not bothering to hear his own composition, heard a hundred times already.

With a clap the Inquestor summoned Sajit. Sajit approached him, sunken in his throne with his shimmercloak strewn over the gold steps patterned with a sequent frieze of quartz-eyed pteratygers. The music went on, not needing direction.

"You seem so tired, so remote," said Sajit. He could talk so directly because when they were boys he had saved Ton Elloran's life.

"Wouldn't you be? We've just come from another war."

"Yes. You commanded the migrations of a dozen people bins. Very tiring work. Yet you showed no emotion at all." Try as he might, he could not conceal the irony in his voice. For a moment he remembered—

Chasing the people bins into the overcosm, the slow dance of the black ships against the glittering firelights of the space between spaces, and then the last people bin vanishing like a dust-mote drifting from light into shadow . . . and a single tear on the Prince's cheek. Sajit remembered thinking: *Perhaps he* is *human. How should I know? We are the same age, and yet his face is far more youthful than mine, except for those gray eyes radiating all the ancientness of the Inquest's power. As well befriend the mountains or the stars,* he had thought, cautioning himself against feeling too much involvement with the Inquestor.

"Look at it," Elloran said, interrupting Sajit's reverie. "Alykh, the pleasure world—"

"Where we'll go down to Aírang, city of cheap love," said Sajit, "and we'll ride the varigrav coasters and drink sweet zul and dance

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in the gem-paved streets, until—"

"Until we have forgotten all our pain."

We'll be *dorezdas,* thought Sajit. *And Ton Elloran will never see the Sewer Labyrinth or the husks of dead palaces where live the thieves and the beggars and the ugly and the dying, those who call Alykh their homeworld, who eke out an existence by fleecing the dorezdas with their eyes on the stars and their minds on the problems of the rich and their pockets lined with arjents. But I will know.* Could it really have been twenty years since a filthy, bone-thin boy had fled the city, clinging to the tunic of a broken old wandering dreamsinger?

"You were born here, weren't you, Sajit?"

Aírang. Home. "Yes. But now I'm a dorezda with fine clothes and a clan-name and a place at an Inquestor's court—"

He remembered home as a hovel in the rubble and he turned his mind to music, trying to forget.

Lazily the railinged floater fell towards the city, Ton Elloran standing apart from the others, alone even amid his dozen attendants. A delicate f'ang scented vapor gauzed them.

You're burying your pain, aren't you? Sajit thought. *Burying deep inside yourself the memory of the war.*

From a corner of the floater, a quartet of whisperlyres played and a boy singer sang softly of a lost love he could never have known; for Ton Elloran never went anywhere without his own music, he could not bear the silence. Below them, the city—

Aírang of the *dorezdas!*

Pillars of klomet-high varigrav coasters, etchveined Ontian marble knuckleduststudded with amethysts, darkstriping the purple sunset . . . jousting giant reptiles clawing the sunlight and pawing a screechy thunderdust over tiers of cheerers . . . Aírang of the tower-tall buildings warpwoofed with jewelthreads of streets and echo-rich with laughter. . .

They reached the guest-hostel of Ton Exkandar, Kingling of the Alykh system, a high tower of brick and vine, wound round with a spiral balcony. As the floater eased on to the dais that jutted from the topmost turret, Sajit spoke to Elloran.

"Let me alone into the city awhile, Inquestor."

Ton Elloran turned. "But Sajit, my music—"

"This is my homeworld." But as he said it it rang false.

"Of course. It must have been twenty years." Elloran paused to straighten his shimmercloak, which glowed faint pink against the

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dark blue fur. "Of course you must go, Shen Sajit." And then, "Will you let me come with you? Will you show me what this city really is?"

"You don't want to know."

"I'm tired of wearing my mask of compassion," Elloran said. "I've pried a trillion people loose from their worlds like so many barnacles . . . I'm losing touch, Sajit!"

"Yes."

The floater now was still, and the sounds of the city assailed them: hawkers' shouts, the strumming of distant dreamharps, the whoosh of the rich men's gaudy floaters—some mere circles of metal that wove their way through the forest of towers, some with great caparisons of peacocks' wing and gilt, sailing majestic through the violet sky, some with crimson-cloaked trumpeters sounding brash sennets . . . Sajit waved to an attendant, dissolved the darkfield that englobed the Inquestral floater. Seeing the glitter of the shimmercloak, a man cried out and the traffic jam of floaters parted suddenly. A ray of mauve-dyed sunset fell on the square below the parapet; people wriggled like little worms. A gate irised in the turret to admit Elloran's party. As Elloran stepped in he tore the shimmercloak from his body. . . .

One did not understand Inquestors, Sajit thought as they drifted slowly down the airtube to the surface of Alykh. He glanced at his own clothes—the short cloak of cloth-of-iridium trimmed with clingfire, the kaleidokilt of the clan of Shen with its semisentient buckle of two mating flamefish—and thought: *I've become one of the very things I used to despise, the people whose pockets I picked and whom I used to beg from. . . .*

And beside him Elloran floated, frozen-faced. Others fell above and below, streaking the mirror metal of the air shaft. *What does he know?* Sajit thought bitterly. He remembered the burning planets and the people packed in their people bins, and the Inquestor's impassive, soft-spoken commands. *He's blown up planets, but he hasn't stood at the gateway of the Sewer Labyrinth and smelt the stink of the dead . . .* and he pitied Elloran then. He must always be alone, after all, and have slaves for friends and feel compassion instead of love and play the Inquestral game of *makrugh* instead of living relationships.

At the floor of the shaft, about to step into the street, he thought: *Perhaps* I *should show him those things.* The windstream ruffled his hair and he pulled his cloak tighter. Sunset came swiftly on Alykh, and he knew it would be night now, a night more garish-gaudy even

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than the day. "Here," he said, "you don't want to be without your music." He pulled a songjewel from a fold in his kilt, snapped it awake, and placed it around his master's neck. It was a quartet of shimmerviols, and Elloran smiled a little. A door dissolved; Aírang's noise assaulted them. Sajit stepped on to the street and turned to Elloran with a twisted smile. "My home," he said, with an ironic sweep of the hand.

He led the Inquestor through a glass-cobbled square where revellers skied the bright night sky on threads that were yoked to pteratygers, their pink feathered wings flapping as they soared and wheeled. . . .

"Where are we going?" Elloran said.

"I'll show you," Sajit snapped, ignoring court protocol. But Elloran did not seem to notice.

"Artists," he muttered, and Sajit felt a ghost of their old friendship for a second. They found a displacement plate at the corner of the square and Sajit leapt on to it, not waiting for his master.

. . . They stepped through a corridor of an indoor theater, masked actors moving solemnly to a slow heartbeat of a drum and sing-songing in piercing artificial voices, dead husks of men perhaps, animated by hidden thinkhives to imitate the dead classics, and the audience murmuring in languid unison. . . .

"Come!" said Sajit urgently. Elloran followed behind, not observing that the servant had taken the lead. For a moment Sajit thought, *I'm pushing too much, he's always allowed me to speak freely but he's not my friend, he's an Inquestor* . . . but recklessness seized him.

. . . an orgy-field drenched in *f'ang* vapors, the field itself thrumming softly to the rhythm of a hundred lovers . . . a shrill street opera . . . a slave market . . . the varigrav coasters looming high in the distance, with specks of people as they plummeted on antigraviton fields, swarming like fireflies. . . .

And then darkness.

And silence, save for a whisperbuzz of shimmerviols from the Inquestor's songjewel. "Are you afraid?" said Sajit. There was a stale breeze in the darkness, tainted with a tang of death.

"No."

"Do you want to see where I grew up?"

Elloran didn't answer. "This is the Sewer Labyrinth," Sajit said, "that runs beneath the city. We used to play here. Come on."

They passed through twisted tunnels, and Sajit, growing used to the darkness—there was a faint phosphorescence here—saw Elloran watching everything, memorizing everything . . . the stagnant ca-

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nals, the old bones, an old man with gouge-yellow cheeks, staring listlessly from behind a frayed wisp of blanket, the children who ran after them throwing stones and jeering. . . .

"I was one of those," Sajit said. They emerged into a street, barely manwide, a displacement plate that didn't work, buildings strung together from sheet metal and old starship hulls. Striding fiercely through the garbage, Sajit made for his old hovel, knowing that it could no longer be there, that buildings sprouted and withered overnight here in the slums of Aírang. "I would have died here if I weren't a survivor."

They threaded their way through endless reeking alleyways, and Sajit realized he would never find his old home. He was angry, and he wanted to be cruel.

Above them the sky glowed, now fluorescent green, now garish pink . . . the lights of Aírang were all that the hovel city needed. They reached Rats' Valley, hemmed in by two hills of refuse, nicknamed for the rodents that scurried pitter-patter through the dark and preyed on the babies, dead or discarded, half-buried in the rust and dust.

They stopped. A cloud of dust made Sajit cough. Finally Elloran said, "What do you want of me, Sajit?"

"Powers of powers, Inquestor! I just want you to admit you're human too, I just want you to step down from your mountain of power and touch the people you kill by the billions . . . look!" He kicked up a flurry of dust and dried excrement. "I was born out of this dust, Elloran! And you came out of a Prince's palace. Yet you destroy planets, and I make songs." He turned away. He had broken all the bounds of propriety. In public it would have been certain death.

"You too, Sajit," Elloran said at last. To Sajit's annoyance he did not seem angry. "There are times when I think you almost understand, but . . ." He tore the songjewel from his throat and flung it into the débris. A single clank and it was gone. "Are you satisfied now?"

"You *asked* to be punished, Ton Elloran."

"Yes. Yes." The Inquestor turned back and began walking back to the slum and the Sewer Labyrinth. Was he angry? Sajit could not read him. Perhaps they had quarrelled, if a person could be said to have had a quarrel with an Inquestor. Sajit let him go. He didn't know whether he had made his point or not. He was tired and he wanted a woman. *Why not*? he thought. *I'm a dorezda now*. With a flick of his mind he turned on the tracer at his wrist so that Elloran

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could find him if he needed him. Perfunctorily he flicked the dust from his clothes a little, and then he headed towards the whores' quarter. The stinking streets went by in a blur, and when he reached the first of the operational displacement plates the squares of the city went by, their colors jangling dissonances. . . .

"Master, master . . ." a wheezing voice. Sajit turned. Standing by a pillar of flame, the old man beckoned him. The face was indecently withered; he had probably let it age in the old way as a grotesque tourist attraction. "You want a girl?" Sajit didn't answer, and the old man came closer, bowing himself in two. "I have such girls, master, such girls, and for a mere demi-arjent they will lull you with song and yield to your masterly touch . . . you do not speak, master! Is it boys you favor? I have such boys also . . . do you want pain and punishment, do you want strange alien creatures perhaps? I—"

"De zon dorezda!" Sajit snapped in the local lowspeech.

"You are no dorezda!" the man said, not switching to the lowspeech. "I see you have learnt some of our words, excellency. You come here often then . . . for one of such discernment as you, I have other things . . . lo . . ." He snapped his fingers and summoned holosculpt miniatures out of the thin air. Women wheeled and dissolved into other women, and all had the perfect body and the perfect face that marked the Alykhish pleasure girl, the bodies rebuilt each year before they became too worn . . . "But sir," said the pimp, "I see you are interested, and yet you don't speak. Don't be embarrassed, master! Perhaps in your palace you dare not speak your desire, from modesty or from compassion, but here there is nothing one dare not desire, nothing your demi-arjent will not buy . . . of course," his voice fell to a sly whisper, "there is a surcharge for death."

"Powers of powers!" Sajit cried, "I speak my mother's tongue and you flatter me for picking up a few foreign phrases! I come looking for a woman and you show me images of my mother!"

"I see," said the old man, uneasy now. "You *are* a child of Aírang. Well, I have just the thing. Follow."

Sajit felt a surge of anger. For such a one as this his mother must have worked, despising the dorezda who spawned him.

Shrugging, he followed the old man as he hobbled towards the fiery pillar. The pillar parted and they stepped into a cool atrium. Above their heads was a still holosculpt caelorama of a cloudless bloodred sky. The floor of the atrium was dust.

And in the center of the atrium, in a startling shaft of white light, a slow nebula of dust swirled. . . .

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"She is not a mere whore-without-a-clan, excellency," the old man was buzzing. Sajit ignored him, entranced by the strange dust-sculpture. He had seen such things before, but never so classical . . . it was like one of the ancient songs, strophic, pentatonic, nothing to it at all. All the events of the day seemed senseless beside this. . . .

"It's unbelievable," he said. "Who could have done such a thing? From which Inquestral court does it come?"

"He said I was no clanless whore, dorezda." A woman had stepped out from behind the dust sculpture. Sajit noticed at once the beige hair streaked with turquoise, streaming behind her because of the field that held the dust sculpture in place. The hair was the only luxury; she wore a rough brown smock, as though she had stepped right out of the Sewer Labyrinth, and her face must have been unrefurbished for at least two years; it even sagged in places. "I am Dei Zhendra of the clan of imagers, a dust sculptress."

"Is she not beautiful, master, is she not as classic as the ancients were, before our cosmetics and our artificial faces, eh?" said the pimp, nudging Sajit suggestively in the ribs.

"Get out!" Sajit cried. He whirled around and the man was gone. Somewhere outside a beggar boy was singing. "You shouldn't be doing this!" Sajit said. "How can you demean yourself so much, Zhendra?" The woman was beautiful; not as the pleasure girls were beautiful, but beautiful also because of what she had done.

"Dust is expensive, excellency." There was a bitter mocking in her voice. She led him behind the dust nebula and he saw sacks of dust piled neatly against the far wall. "Not every kind of dust will do, you know. At your feet is the common dust, a gipfer a sack, useless, useless, useless. It will not bear the static charge you need for this." She pointed to the sculpture. As it swirled, motes sparkled and died. "You see, the best dust comes from the other end of the Dispersal of Man. From a planet called Aëroësh."

"Aëroësh . . . in an old dead tongue, 'the dust'."

"It is a beautiful dust. A dust on tiny silicate chains, charged and polarized, that reach for each other and flow and swirl almost like a living thing. . . ."

"You've found no sponsor, Dei Zhendra?"

She laughed, then, a terrible, despairing laugh. "Who can love the dust?" she said. "Three sacks I bought last year for five hundred arjents, and the pimp takes eighty percent. . . ." And then she said, "And I would rather sell my body than be a slave to a Princeling's whim, dust-sculpting the likenesses of his mistresses and having no square of earth to call my own."

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"But you're wrong!" said Sajit heatedly, even as he was drawn to the woman, seeing deep inside her an echo of himself.

She laughed again. "What do you care? You won't see me again after tonight. I never have a man twice. So tell me how you want it and stop searching my soul. *Excellency.*"

"Zhendra—" he reached out for her but he couldn't feel any sexual passion. He knew he wanted to get her out of there, he wanted to show her how much they were kin to each other, how they had both striven to reach above the garbage heaps and embrace the whole Dispersal of Man, but—

"Here," she said, mocking again. She was lying down in the dust and stripping off her smock, and then she flung it aside so casually, so gracefully. Even here she was all artist, not needing the makeup and the facelifts at all.

"In the dust?"

She only laughed. He felt aroused at last, and knelt down to kiss her.

They heard footsteps. Sajit jumped up in a panic. The dust flew wildly for a moment. . . .

"I am sorry, Sajit." Elloran stepped into the room, his shimmercloak churning up the dust. "I don't know why I eavesdropped on your tracer, why I came here. . . ."

The woman had risen now. Sajit bit his tongue. He could not show his anger here, in front of a strange woman; one knew better than to intrude on an Inquestor's dignity.

But Zhendra shrieked, "Get out."

Elloran walked slowly around the dust-sculpture. Then he looked long and still at the woman, shaming her to silence at last. But she did not beg his pardon. Elloran smiled the wan little smile he often had that was meant only for Sajit. Sajit struggled to contain himself. If he had not known how compassionate an Inquestor must always be, he would have sworn that Elloran was trying to hurt him deliberately.

"You have taste, Sajit," Elloran said. "She *is* beautiful." Could he actually be trying to take her away from him? Then he said, "I at least am not a slave, eh, Sajit? Not to any man. Only to the whole Dispersal, only to mankind itself. Oh, you should pity me . . . would you like a palace of your own, girl, and a sack of dust a day?"

He's drugged! Sajit realized at last. *He's let himself lose control—* How could an Inquestor say these things?

"Well?" Elloran shouted. "Shall I drag you away from this creature who reminds you so much of your lowly origins? Would you like a

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planet of your own? I have a dozen! I have Ymvyrsh, I have Elderéldad, I have Ménjifarn, Kailása, Chembrith, Murálgash, Gom, Aëroësh—"

He saw Zhendra's eyes widen, star-sapphire-blue, heard her little gasp. . . .

He didn't want to look at them. She was using the Inquestor! And the Inquestor was using her to get back at him! It smacked of *makrugh*, the complex game of power that only Inquestors played . . . and yet he knew that Elloran could not be playing *makrugh*. You didn't play *makrugh* with an underling. He wheeled around until he faced the whirling nebula.

The dust twisted slowly, sparks shifting from shining to shadow.

You've won, Elloran, he thought resentfully.

Varezhdur the golden palace circled the pleasure planet until the days of the Cold Season trickled away. It did not grow warmer or colder, of course; the names of the seasons were legacies of a lost past. The palace grew too: a wing for the woman of dust, a maze of chambers twistier than a conch-shell's innards, a forcedome outside the walls where a nebula of dust grew daily beneath the starstream that it echoed.

Hour after hour Elloran would watch her. On the mirror metal floor lay countless strands of dust, formed and charged and ready to be activated into the pattern with a deft wrist-flick. From a recess in the floor Sajit's music would play. His music was harsher now. No more the shimmerviols and the whisperlyres, but the clang of kenongs and klingels and glass-shatterers beneath shrill highwoods. Zhendra labored, scooping up armfuls of the charged dust and flinging them into the field, sometimes diving into the cloud to draw out swirls of dust with her charger, sometimes deactivating a whorl so that its motes fluttered to the floor. She did not notice the music; she did not seem to notice the Inquestor either. Away from the dust she seemed only half alive; enveloped in it, dancing in the dust, she seemed to become part of it, to become a single, breathing organism with it. Sajit envied her her freedom. He knew that even when she slept with the Inquestor she could not feel like his possession.

As the Cold Season ended she came instead to him, seeking variety perhaps. Sometimes he would know that she had just come from Elloran, but she never said anything. He didn't question his good fortune. Her lovemaking was violent; always she wanted to lead the way. Their bodies were flaming and yet he would always know that her mind was far away. He felt like a dust-mote that had veered too

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near the sun. Perhaps he was in love.

In the Season of Mists the palace moved into orbit around Kailása. In small floaters they would chase the sunlight, skimming the clouds, pausing to hunt the fierce lighthawks with their ten-meter wings leaf-bright with chlorophyll as they grazed off the brilliant sunlight; or to trap the firephoenixes as they mated, shrieking, in mid-air. When they tired they would change direction and follow the night, playing zigzag races through the rifts in the Mountains of Jérrelahf. And when they tired of that too they swung south and rode the flying sea-serpents in the Pallid Ocean and harvested the honey-eggs that floated on the waves cracking them open to quench their thirst. Or north to ski on snowslopes dyed scarlet by hardy bloodalgae. Always the Inquestor would ride, alone but for the music and the master of music, and Sajit always played the new harsh music, not wanting to give his master the sorrow-drowning sweetness that he craved. Since that evening not long after the last war when they had both found Zhendra, Elloran had not lost control of himself. He had not said a word when Zhendra began visiting both of them, for an Inquestor could not hang on to material things. Sajit knew that Elloran was hurt. He *had* to be. Unless Inquestors really were like automated thinkhives and not like human beings. . . .

Admit your hurt! he would think silently, whipping up the musicians to a maenad frenzy. But Elloran would stand and watch his courtiers cavorting and sometimes he would even smile.

And after, when they were too tired even to float and watch the circling of lighthawks or phosphorleafed forests quivering in the double moonlight, they would leave this unpopulated world and go back to Varezhdur to do what had been obsessing their thoughts all the while. . . .

The nebula had grown to the height of three men; twice the force-dome had been expanded. The dust had come from Aëroësh at staggering expense, by tachyon bubble. An extravagance only an Inquestor could command, for it was said that whole suns died to fuel those specks of realspace that flashed instantly from world to world, bypassing even the overcosm of the delphinoid shipminds. The gesture had maddened Sajit even as he wanted her to get her dust in time.

She worked and Elloran watched her, both oblivious of the increasing dissonance. Angrily Sajit clapped his hands for silence. "Will it never be done?" he shouted. Zhendra worked on. But Elloran whirled and cried out, "It must never be finished! I never want her to finish it!"

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For they both knew what she would do when the nebula was done.

Ton Elloran was a consummate player of *makrugh*, the game of war and power that pitted Inquestor against Inquestor. With that single war he had deflected the wars of the Dispersal away from his own sector, with only a planet or two destroyed; now they could expect peace for a few years.

The Mist Season became the Season of Rains. The palace Varezhdur came to Chembrith, the chief world of Elloran's principality. Two whole continents were covered with the thinkhives that coordinated the worlds Elloran ruled. Another continent housed the starships sent from far Gallendys. And the fourth contained the cities: Angesang with its twisting walls you could see even from space, writhing like copulating snakes; Táthenthrang with its rainbow-tiered terraces, hanging over the Lake of Octagons; Ghakh of the thousand pyramids, with its university; Dhandhesht where were stored the holoramic memories of dead worlds. Solitude turned to the business of government. Diplomatic receptions on floatislands hovering over the Lake, where spectacles of times before the Dispersal were enacted over the waters to the strains of thousand-man orchestras. Fierce games of *makrugh* played over interstellar distances, convocations of Inquestors, stiff and sternfaced in their shimmercloaks, sipping zul in small palace chambers. New programs for the thinkhives to mull over.

For Sajit there was new music to write; every event, every new inning of *makrugh,* was to be accompanied by new music. Elloran seemed insatiable. He worked as though a demon drove him, almost courting the heresy of utopianism, for he assured by his diplomacy that war would be allayed far longer than the Inquest usually thought suitable. Sajit alone knew what was driving Elloran.

In Varezhdur, the nebula was almost completed.

He and Zhendra made love in a room in the high citadel of Táthenthrang, on a hovercouch that drifted in time to a sad slow consort of hidden shimmerviols. But she was ever more remote now, living in her own imagined world, breathing the dust-made starlight. When they finished he sent the hovercouch flying beyond the balcony, high above the Lake of Octagons. They sat and watched the city, each in his own little silence.

"I hate this city," Zhendra said. "There's no dust here at all. In the morning come servocorpses, scrubbing the stones of the city even where there is nothing left to scrub. It's inhuman."

From the lakeshore to the horizon the terraced levels of the city

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stretched, each coded in a rainbow color. It was beautiful to Sajit, and tragic too, because Elloran had caused the city to be built in memory of the Rainbow King, a mad Inquestor who had tried to make a utopia from a dead world, peopling it with corpses that mimicked the living, and festooning the sky with rainbows. It was this utopia that Elloran had undone, so long ago when they had been a soldier-child and an Inquestor-to-be; but it was Sajit who had killed the Rainbow King by breaking his first whisperlyre over his head, to save the boy Inquestor. When the utopia was broken, their friendship too had ended. . . .

Zhendra said, "That's why I'm a dust sculptress, you know. I see the towers and the monuments, the palaces and the ziggurats, and I see the dust on the streets . . . and I know that when the palaces have crumbled the dust will still remain."

She's opening up to me, Sajit thought wonderingly, *in the only way she knows how.*

"I love you," he said uncertainly.

"Ton Elloran will not let me leave," she said, "after I finish the sculpture. But I must . . . I must go to Aëroësh. I must embrace the dust. You must make him . . . he has promised to send me, but you know an Inquestor need not answer to a promise. . . ."

"What influence do *I* have?"

"He trusts you. You did him a lot of good, by bringing him down to the slums of Aírang."

"I turned him into a vindictive monster."

"That too." She looked away. They were circling low over the lake now, sometimes even getting a little wet. Some children in a skiff watched them curiously, voyeuristically perhaps, for Chembrith was a modest world where lovers did not often embrace in the open. Then Zhendra said again, "Aëroësh, Sajitteh. Remember Aëroësh." He could not tell whether she loved him or not. Certainly she had never said so, but he could easily put that down to pride. But she could just be using him as a way to get to the dust world.

"Aëroësh," Sajit repeated listlessly.

The long peace surpassed all their expectations. The Dry Season they spent in Ménjifarn, where the lives of the flora and fauna were counted in minutes and seconds. They watched vast groves of flowers shifting their colors as they died and bloomed afresh, like klomet-wide kaleidoscopes; they watched the birds that soared but once to mate, then plummeted in feather-fluffy rains and cotton-candied into the soft earth. Forests sprang up and toppled, and the only

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humans were miners who manned the metal mines of the fever-lush equator. Varezhdur did not linger, but pinholed further through the overcosm until it reached Gom, where they finished the season with a deep space fireworks of exploding asteroids.

Not nearly soon enough, it seemed to those who attended the Inquestral court, the palace returned to orbit around the planet Alykh, for the Cold Season had begun. Neither Sajit nor the Inquestor would descend to the world below, and so the palace was mostly empty. And Sajit's music remained harsh, and grew ever more shrill and violent as the nebula neared completion. Now they watched her all day, as she worked until she dropped, hardly eating or sleeping. Her cheeks were hollowed out now, her eyes dead; she might have been one of the dying in the Sewer Labyrinth of Aírang. And the uglier she grew, the more beautiful became the nebula of dust, almost as though she had bequeathed it her own beauty in the final days of breathing life into it.

It was done.

She walked towards the Inquestor on his throne. Sajit saw from the orchestra pit that she could hardly stand. He stopped the music. She whispered "Aëroësh", so softly it could have been a leaf in the wind, and then she stumbled to the displacement plate and dematerialized from the room. Sajit thought she was going to die. He walked up to the Inquestor and looked at him for a long time. His gray eyes were lifeless as polished stone. Half-Alykh filled the blackness beyond the forcedome. Neither of them would look at the dust sculpture. Sajit already knew it by heart anyway. It was about ten meters tall and wide, and it echoed the stars around them, and it drew its stasis-field-power from the starlight itself. Sajit said, "You have to do as she asks, Elloran. You promised, and an Inquestor must always speak the truth."

"Because truth is always defined by what an Inquestor speaks!" Elloran shouted, angry. He drew himself up, shook his shimmercloak straight, and stepped down from the throne. "Are you in love with her?"

Sajit didn't answer. "You're reaching for the impossible, Sajitteh!" Sajit flinched at the Inquestor's use of his child-name. "She's like me, not like you. She has the Inquestral mind—she sees down to the core of things."

"You *are* jealous!" Sajit cried out. Then he realized that the musicians were listening. "Neither of us has a hold on her, Elloran. You have to let go."

Then both of them turned to watch the dust as it imitated the

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stars. But only for a moment. Sajit could not bear it. And Elloran said, "The peace has lasted too long. Next year I will play *makrugh* for a war."

When she was well again Elloran sent her to Aëroësh, the world at the edge of his kingdom that he had never visited . . . she went with nothing but her tools and a little money, taking none of her new fine clothes or the Inquestor's gifts, wearing only the slumsmock she had come in. Sajit watched the tachyon bubble as it passed through the shipwalls to begin its journey through the unseeable tachyon universe.

Then Elloran commanded that the forcedome of the stardust nebula be opaqued and the displacement plates that led to it deactivated. No one would gaze on Zhendra's creation. . . .

In the throneroom, Sajit relented and played a sweet soothing music, but Elloran asked for the ugly music back. Sajit did as he was told.

Then he went down to Aírang.

Quickly he found the whores' quarter, with its winding alleys flanked by flame-pillars in garish colors, sodium-yellow or copper-blue or potassium-purple, behind which the pimps lurked like cockroaches, avoiding the brilliance of the night sky. He went from pleasure girl to pleasure girl, each one as perfect as the last, devouring them like sherbets. There was no pleasure in the aftertaste. They reminded him of his mother.

When he returned to the palace he found that war had broken out in a distant sector, and Elloran had allied himself with the Inquestor who had styled himself loser. *Makrugh* again, played with a vengeance.

Then came a five-year leave of absence, for Sajit needed to be alone, to travel the Dispersal by himself. But he could not forget Dei Zhendra. When he returned it was as though a single breath had passed. . . .

Varezhdur had grown, of course. The chamber of the dust sculpture was sealed and unreachable; it no longer hugged the skin of the palace and faced the starlight. It was buried under a tangle of gold steeples linked by coils of corridors. Atop the steeples sprouted a bright new amphitheater for grand concerts.

The seasons whirled; there was no news of Zhendra, for the planet Aëroësh could not be reached quickly through the overcosm; a delphinoid shipmind might take subjective years to reach it, and time

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dilation would take a terrible toll. But Sajit did not want to admit that he had lost her.

One day he was playing a new song in the new amphitheater, scored for a child's voice and a single whisperlyre. The words, in the highspeech, were:

daras sikláh sta lukten z'ombren
af chítaras seréh chom aish
chom daras fah. . . .
the stars circle from light to shadow
and even our hearts will become as dust
as the stars have become. . . .

With an imperious wave Elloran dismissed the orchestra and summoned Sajit to his new throne. The amphitheater was larger than the old throne room, and more austere: no carvings covered the ceilings, no pillars of flame adorned the walls of plain white Ontian marble. Sajit walked the hundred paces from the pit to the throne, a circular reclining throne of white clingfire stuffed with kyllap leaves. He was thinking: *Why must he surround himself with such immensity? Does he want to extinguish himself, like a single dust-mote in the emptiness of space?*

"My Lord," he said. Elloran struggled to produce the beginning of a smile; Sajit saw that his eyes had become lined. He had abandoned cosmetic renewal . . . he was *trying* to age, he who had the choice of living far longer than those without power.

"You're still thinking of her!" Elloran laughed drily.

"I want to go to Aëroësh, Elloran. I want to see what it is that makes her love the dust."

"There's been no word for years. And if you take a delphinoid ship to Aëroësh there's no guarantee that she won't be dead when you arrive. You know how the pinhole-paths through the overcosm are; space and time lose all meaning, and Aëroësh is too far by objective time for a single lifetime's journey."

"You're toying with me, Inquestor! You know I'm going to ask you for a tachyon bubble."

"Yes, I know." He seemed to sink back even further into the clingfire softness. "Tell me, Sajit . . . why is it so important? Why must I kill a star to send you on a mission of unrequited love?"

It was hopeless. "You're an Inquestor," Sajit said bitterly. "You can't possibly understand the love of ordinary people. How can you feel such a thing, you who can pulverize planets with a single word?"

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"Sajit, Sajit, I'm not trying to obstruct you, I'm trying to tell you that it's useless. . . ."

"Let me see for myself."

"Sajit, you're too proud to see the truth about this love of yours. . . ."

"You're still competing with me! You with your hundred palaces and your dozen worlds stocked with slaves and your tachyon bubbles and your—"

"I never competed with you. You flatter yourself, that I would condescend to play *makrugh* with you. Yes, I'll send you to Aëroësh. May the powers of powers protect you."

Sajit closed his eyes then. He wanted to remember Zhendra the way she was when he had first seen her. He knew of the beige hair streaked with turquoise, the eyes like sapphires in cold light, the haunting, taunting voice, the strained remoteness of her when she dreamed up her nebula of dust . . . he knew all this but he could not conjure up her image. All he could see was the dust, swirling, whirling, so beautiful you dared not gaze at it for long . . . the dust did not swirl for him. It did not need him, or anyone; for in eternity they would all be dust.

"I want a floater to the surface, and a guide."

. . . a city of drab stone, squat buildings set upon honeycombs hollowed from rock, beneath a forcedome that kept out the sky of red-brown dust. . . .

"Are you crazy, sir?" The official shivered and offered Sajit a glass of mulled zul. They were in a small evenly lit room of brown rock, reclining on awkward couches of cushioned stone. The official was an elder of the city, disturbed and not entirely delighted at the command to entertain a dignitary from the court that theoretically held sway over the forgotten world. "The dust," he said, "is treacherous. It would kill anyone who went out in it. We do not love the dust here, Shen Sajit. Why, six years ago a woman came, a courtier such as you, sir. She courted the dust—"

"Where is she now?"

The official shrugged. "Your lives are so different, you courtiers. When you are bored of your luxuries you even seek out the deadly, the ugly, the horrifying. I imagine that she sought her own death for some reason that we Aëroëshi are too unsophisticated to understand."

"Was she—"

"Zhonya, Shondra, some name like that. . . ." He downed his

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beaker of zul with a single swallow. "In any case, I strongly advise against it. What could possibly be interesting about huge clouds of dust that sweep the plains and would scour and devour everything if there were anything to devour? So what if they sometimes seem to take on lifelike shapes, to mimic starswarms and nebulae as they gust without purpose across the barren lands?"

"They mimic nebulae?" Sajit said faintly. The beaker slipped from his hand. A servocorpse silently removed it and wiped the stain from the polished rock. "Then she's alive! I must go up there now!"

The official laughed. "Give me ten sleeps, maybe more, to find someone foolhardy enough to guide you. It may be that we have a forceglobed flier that can withstand the storms, somewhere in the city. But it will have to be repaired. We have no reason to go out on the surface. We can see the dust from here." And he pointed out of the window, out at the sky.

Sajit trembled, unable to answer.

Erupting from the dust, the floater burst into a scarlet sky. It was an incredibly ancient device built by some hobbyist, perhaps never really meant to fly, that thrust through dust and atmosphere by flinging out a jet of smoke-tinged blue flame. Sajit was not happy with it, even though a darkfield had been added to it and englobed it completely except for the opening for the jetstream. He strapped on his restrainer too tightly and tried to push back as far as he could into the seat-cushions. The guide, hardly more than a boy, slipped the vehicle into an airstream and let it coast, raising and lowering its wings according to some mystic-seeming pattern. The flier steadied itself, and Sajit dared to look down.

"I want you to follow the first dust-pattern that you see," he said.

The guide shrugged. He was being well paid, and understood well the idiosyncrasies of the rich. They flew against the sunlight; when Sajit looked through the ring of round windows he saw endless bleakness, brown unbroken flatness. The dust seethed a little, like water beginning to boil, but he saw no works of art. . . .

"A storm, sir!" the guide shouted. With a wrench he flung the flier into the sun, darkening the field to avoid blindness. Sajit saw nothing—

And then, at the very limits of the horizon, a small smudge shivering like a frightened rodent—

"Follow it!" he whispered urgently. Zhendra must be there. At the heart of the dust. The flier gathered speed, nauseating him.

The dust raced towards them. Without warning they were soaring

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over it, and Sajit could make out what it was . . . the arm of a gigantic spiral galaxy that whirlpooled over a hundred square klomets. His heart almost stopped beating. "Go into the nebula!" he shouted.

Outside the roar must be like a thunder of lifting starships. Through the portholes nothing could be heard. The dust shifted and sifted like in a dream, too huge to comprehend. *She must be in there,* he thought. *How can I make her understand?* "Can you fly this thing in patterns?" he cried.

"How, sir?"

"The smoke-stream! I want you to burn letters into the dust!"

"I can't go into the nebula, sir! I'm not crazy!" the boy said. The flier veered wildly in the wind, losing speed. Soon the dust would swallow it—

"Let's go back!" said the guide.

"Is there a lifecraft aboard this flier?"

The boy nodded. "Take it," Sajit said. "Go back. This thing can't be so rickety that a veteran of the overcosm wars can't at least maneuver it. . . ." Without a word the boy scurried away. In a moment Sajit saw the small pod thrusting through the dust storm like a lost insect. The boy had not been paid to die, after all. He could not force him. . . .

The flier spun in the storm, Sajit eased over to the control panel and subvocalized his instructions to the flier's little thinkhive, hoping it was advanced enough to obey him. . . .

The flier leapt! and swerved! Sickness churned his stomach as the smoke trails formed into *zhash,* the first letter of Zhendra's name, blue fingers of color against the mud-red—

Again and again, leaping and swerving, the gee-shifts pushing him into his seat and flinging him outward against the restrainers, *zhash* after *zhash* in two-klomet-high figures of flame—

He felt the craft weaken against the wind. The voice of the vehicle's thinkhive broke the raging silence:

I am not programmed to deal with such stresses! Please reduce density of programming, pending restoration of flier stability—

Zhash! against the tossing tempest—

Zhash!

Zhash!

The thinkhive's voice—*I am unable to continue with present programming. The craft is now out of control. I cannot hold the forcefield. Environments will interface in a few seconds—*

Sound now, dust hail-pelleting the portholes, whooshing of the

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storm, ahead, the eye of the nebula unmoving in the turbulence—

I'm going to die.

He was falling. He could not survive. And then there was a frozen moment in which seconds stretched like elastic, and his head was light as though the air were drenched with the drug *f'ang*, and the dust was cramming his nostrils but he couldn't feel it—

And then he saw her. The eyes glazed, icy, the cheeks gaunt, the hair straggly and lustreless, the worksmock torn, the nebula whirling around her, engulfing her and yet coming out of her, just as on the day she had finished the sculpture at Varezhdur—

I'm hallucinating! a small voice inside him whispered.

"Zhendra!" he shrieked, reaching out to embrace the emptiness—

Sílence.

A chamber walled with dust, sourcelessly lit. Sajit struggled to his feet and looked around him, half-consciously straightening out his kaleidokilt. At first it seemed as though the walls were motionless; when he stared he saw the chalk-white dust shift almost imperceptibly. The dust was whirling but time itself seemed to have decelerated to a crawl.

And then she materialized. A woman made of dust. . . .

All dust the hair-strands, dust the eyes, dust the hollow cheeks and sunken limbs, dust the billowing gray smock. Sajit stared at her, not knowing whether to believe his eyes.

"You've become—"

The woman of dust did not speak. She pointed ahead, to the wall: when Sajit turned he saw letters forming out of the dust, words. . . .

I am the Zhendra you once knew, Shen Sajit of the court of Elloran. I am the Zhendra you once thought you loved.

"You can't be! I came all this way—"

Don't be unhappy, Sajitteh. Sajit saw the woman smile a little. Specks of dust rained from her lips. *I have found what I wanted. I have found the secret of the dust of Aëroësh. . . .*

Do you want to know what I know?

The dust has been waiting here for aeons, Sajit. Dust is very patient, you know. There were semi-chains of silicon, almost-cells of dead stone, waiting for the breath of the ion wind. When the storms came they linked a little, waiting for consciousness. Then I came. I came alone into this wilderness with my little charge-generators and field-generators and my silly little plans for artistic immortality. How stupid I was! The wind tempted me. When I gave myself to it, it was waiting. . . .

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It ate away my body like a fire, Sajitteh. And copied it in silicon. And the dust storm made itself slave to my mind, and it found consciousness . . . we are immortal now.

I have given the dust life. I am no longer human, but I am all art, conscious yet created. And I sweep over the dead plains, my body like the galaxy itself, filling the dust with the joy of being alive. . . .

"Parasites!" Sajit screamed, longing for the woman with the beige hair streaked with turquoise. "They've taken away your soul, everything that made you beautiful. . . ."

What was there to take, Sajitteh? I was a nothing woman, a whore among a million whores that garbaged the streets of Aírang. I thought I had a vision—but how can a dead thing have vision? My soul was all I had to give. I dropped it into the dust as a crystal into a saturated solution, and I became one with the dust I loved, I became the soul of the dust . . . you should not pity me. You have your music, knit from tragedy and love, and Elloran has his makrugh, *but I alone have become a planet's breath, its mind, its life.*

"Didn't you love me at all, then? Did you use us, Elloran and me, merely as stepping stones?" As he said this Sajit realized that this was why he had come. For she had never said that she loved him. He wanted to know which one of the two of them she had favored . . . he too had used her. As a way to torture Elloran whom he envied, as a way to punish himself.

A tear of dust fell from the dust-woman's eye. Her hair seemed to ripple although there was no wind.

Behind her the dust said: *I loved you, Sajit. I loved Elloran. But there are some things greater than love, when you are no longer human . . . you could stay here and merge with us, you know. You would know music more perfect than the most accomplished consort of shimmerviols. But I know you will not . . . because it is you who do not love me.*

Sajit wept until he was senseless; and the eye of the nebula lifted itself, and the storm shifted until it hovered over the topmost of the tubes that led to the city far beneath the dust, releasing him unconscious; and then the storm fanned out until it made a nebula a thousand klomets wide, larger than a man could ever see except from high up in space . . . and the dust danced for itself, heeding no man.

The laserdrill shattered the last of the seals and the Inquestor and his musician stepped into the chamber that had lain buried beneath abandoned halls and towers and spiralling corridors, un-

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seen for a dozen years. The darkness was almost palpably intense. Their footsteps rang half-muffled in the hugeness, violating the silence. The air was stale, dusty.

"Thus," said the Inquestor, "we bury our quarrel." He clapped his hands. At once a light-shaft lanced the darkness, a swath of light from floor to ceiling—

The dust, heaped on the mirror metal floor, stirred a little, as the thinkhive that controlled the dust-sculpture searched its memories for the paths that the specks must travel. Silently, the nebula shivered into being out of the cloud, whirling to life. Then the dust danced, always moving yet always one, as the stars have danced since the beginning of time. The arms revolved slowly around a dust-core that blazed in this somber dimness. Fiery dust-specks stippled the imitated sky. . . .

A microcosm dancing with itself. Complete. Alone. Resplendent.

They stood for a moment, too awed for words. Then Sajit said, "I must make a new music to go with this dust. A solemn music, a pavane perhaps." His words pelted the silence. They were unnecessary words. The music, sifting through his mind, said everything.

They walked towards the dust-sculpture, two very small people against the vastness.

"I have received a new thought, Sajit," Elloran said. "The thinkhives are buzzing with it. It comes from a far region of the Dispersal of Man, and here the thought is only a faint one, but it is this . . . the Inquest falls, Sajit. It will fall soon—in a millennium or less, perhaps. Even though the Fall may never touch us here in our palace of gold."

"It's a terrible thought!" Sajit said, unable to think it clearly.

"No, it's not," said Elloran. Then after a moment he said, "We'll organize an expedition of art-lovers, and we'll go down to Aëroësh and see the dust. She would be pleased, wouldn't she?"

Sajit said—for he had only just returned from the dust-world, and had told Elloran nothing—"How could you have known?" He tried to read the Inquestor's face, tried not to show his own startlement . . . but he saw only a cipher. "You knew and you did not warn me?" He felt anger for a moment.

"Could I have stopped you?" And now Ton Elloran had found his throne in the half dark; and he was dusting it with a fold of his shimmercloak. The gesture was a sad one, curiously touching. "You have forgotten so much, Sajit. You who have known me since I was a child, before I destroyed my first utopia. . . .

"Do you really think I am not human? Do you really think I can't

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feel love, pain, the rejection of those I trust, hate, envy? We dare not express these things, we Inquestors, but once I did so, and to a mere soldier-child without a clan. . . .

"You left my palace when she left, Sajit. You were gone five years. Don't you think I ever longed for her? Don't you think I was ever hurt that both of you had abandoned me? Do you think I never needed to go to Aëroësh for myself, to see for myself, to be convinced for myself that my love was a hopeless one? Sajitteh—" He stopped for a moment. In the pause, another strain of music coursed through Sajit's mind. "I heard those answers too, Sajit. And at least we have this now. We have both touched the edge of her terrible joy, and it has changed us."

"Elloran—"

"Enough." Elloran's voice had an unwonted tenderness. "At least we will always have this galaxy of dust." He mounted the throne, carefully lifting his shimmercloak for each step of sculpted gold. Then he sat back into its cushions and faced the swirling splendor.

It was then that Sajit understood how deep their loyalty to each other had always been. Even if the Inquest did crumble around them, this loyalty must still stand . . . he knew he would always be Elloran's servant, giving music of his own free will, giving love even . . . the dust was the great leveller, making the palaces and the slums one.

As always, he waited for a command.

"Go on," said Ton Elloran, "I know you are bursting with music, and you must set it down before it slips away."

Sajit hesitated still. Elloran needed comfort, that was clear. He couldn't bear to leave him alone yet. The stars of dust shone, animated by a woman now transfigured, they shone and shifted and drifted and sifted and made silent music—

"Go!" Elloran whispered harshly. "You are not to see me weep. I am an Inquestor."

Sajit turned his back on the dust-sculpture. The stillness was pregnant, like the hush of a crowd in the seconds before the first note of a new composition. He walked away from the Inquestor's throne, remembering Zhendra's thought:

When we are gone, the dust will still remain.

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IMPROBABLE BESTIARY:
The Genie in the Lamp

Secure and snug and cozy is the lamp in which I dwell,
The lamp in which I fashion mystic lore and magic spell,
And dream of eldritch fantasies no mortal mind can tell.
No mortal eyes can penetrate the lair in which I camp,
But just when I get settled down *some moron rubs the lamp!*
And everyone who rubs my lamp, no matter what their name,
Makes a wish—and all those wishes sound unbearably the same:
For it's

"Gimme money! Gimme pearls!
Gimme sixty naked girls!
Gimme diamonds! Gimme dough!
Gimme Marilyn Monroe!
Gimme a brand-new Cadillac!
Gimme, gimme! Yak, yak, yak!"
I grant their wishes and do as they bid,
Get back in my lamp, and close the lid.
Now then, where was I? Ah, yes . . .

Serene and calm and tranquil is this lamp, my habitat.
I dine on figs and honey from the cliffs of Ararat
And make sure all the harem girls can see my welcome mat.
Beneath Egyptian pyramids I court a sultry vamp,
And just when things start looking good
some moron rubs the lamp!
And it's

"Gimme silver! Gimme jewels!
Turn my in-laws into mules!
Gimme a million bucks or so!
Gimme a ham on rye to go!
Make me Sultan! Make me Shah!
Gimme, gimme! Blah, blah, blah!"
The Brotherhood of Genies (Local Seven Thirty-Two)
Says I have to grant the wishes all these jerks would have me do.

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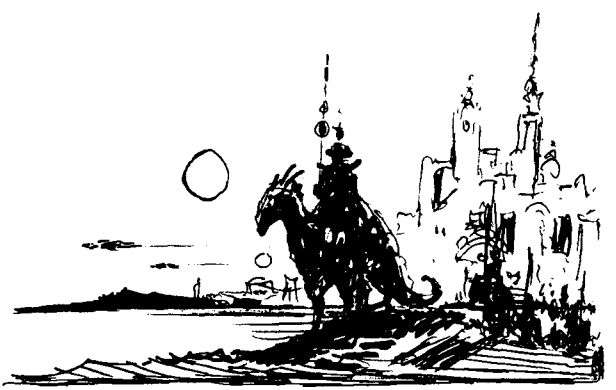
So I bring them oils and spices and I bring them golden fleece
But one rub on my lamp and
All hopes have been dampened
That they'll ever leave me in peace.
They rub my lamp and wish for half the riches in creation;
(Well, I'd sure hate to sadden
Some budding Aladdin
But frankly I need a vacation.)

I'm not granting any more wishes.
Don't rub on my lamp; I'm not in.
So if any of you
Have one wish (or a few)
That you wish would come true
Then the thing you should do
Is forget about Genies with lamps that you rub,
And pick up your wishes, and go to the pub,
And make friends with a bottle of *Djinn*.

—F. Gwynplaine MacIntyre



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DINOSAUR WEATHER
by Dona Vaughn
art: Tim Kirk

The author is presently finishing up a fantasy novel. "Dinosaur Weather" is her fourth SF sale. Originally from Dallas, she's now living on the Texas Gulf Coast with her husband—a research chemist—daughter, son, and dog. The cat, she reports, left.

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A two-inch long *Tyrannosaurus rex* suddenly appeared in midair just above my bowl of egg drop soup. A victim of gravity once more, he plummeted into the bowl. The splash sloshed soup out onto the tablecloth. The *Tyrannosaurus* surfaced and began to swim frantically for the side of the bowl. Five strokes and he was there, but he couldn't get a claw-hold on the smooth inner surface.

I eased my spoon underneath him, lifted him up out of the remains of my soup, and sat him down on the tablecloth just as the waiter appeared with my egg rolls. The tiny dinosaur staggered around for a moment and then recovered and began to dry himself briskly on the edge of my napkin.

"Could I have another table?" I asked the waiter as he turned to leave.

"Sorry," the waiter said. "As you can see, we're rather crowded just now. Besides they're popping in higher on the other side of the restaurant and that makes it a lot more messy, believe me." A splash punctuated his words as another *Tyrannosaurus* dropped into a diner's teacup and there was a regular hail of *Triceratops* in the far corner for about twenty seconds.

The waiter bustled off and I glanced down to find my own *Tyrannosaurus* looking up at me with a great deal of interest. "I always thought *we* were big," he said finally.

"You were," I told him. "You were about eight times my height. Your present size has something to do with the effects of time travel."

"Time travel?"

"You don't remember that you've timejumped. That's another of the effects. At least that's what it says in the papers." I shrugged and attacked my egg rolls. I was tired and hungry. I had changed my mind about going to the office. Instead I spent the morning in the gym lifting weights and doing aerobic exercises to increase my lung capacity. I decided to eat Chinese for lunch because it was less fattening and I was trying to shape up in every way before Tuesday.

I felt a tugging on my sleeve and looked down at the dinosaur once more. I said, "You want me to put you down on the floor? There's a cat, but he's probably full by now. It's been raining dinosaurs in here for the past fifteen minutes."

"No, that's all right," the dinosaur said quickly. He seemed to know what a cat was—which didn't surprise me as much as the fact that he spoke English. But the papers kept describing every curious feature about the dinosaur showers as "due to the effects of time travel," so I guessed that was too.

"Don't worry," I told the dinosaur, who was gazing at the edge of

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the table apprehensively. "The cat's very well behaved. He'd never jump up on a table." Besides, he'd probably gained ten pounds in the past fifteen minutes; but I didn't think it would do anything for the dinosaur's peace of mind to hear that. No more dinosaurs materialized in midair. The showers appeared to be over for a while. Apparently the cat thought so too. He curled up beside the kitchen door and went to sleep.

"It's a little chilly in here," the dinosaur said, moving closer to the teapot.

I glanced up at the ceiling fan and wondered what he would have thought if he had arrived a few years ago while we still had air conditioning. I sighed and went back to my egg rolls.

"Uh, you seem to know more about what I'm doing here than I do," the dinosaur said after a moment.

"All I know is what I read in the papers. We always thought the dinosaurs vanished because they suddenly became extinct. But now all the hotshot scientists say that what really happened was that you discovered how to time travel. You thought conditions were intolerable where you were, so you timejumped into the future."

The dinosaur nodded, but he looked slightly abstracted. For a creature who had figured out how to timejump seventy million years into the future, he certainly hadn't given much thought to what he'd be doing once he got where he was going. I suppose he thought he would remember a lot more things when he got here—like how to timejump again if he didn't like what he found.

I finished off the last of my egg rolls and waved at the waiter. "Excuse me," the dinosaur said as the waiter approached. "Would you mind ordering another pot of tea before you leave? This one is cooling off and I'm still a bit chilly."

"Sure," I said and had the waiter add it to my check. I hung around until it came just to make sure the waiter actually brought it. But then I was sorry that I had stayed, because I noticed that the cat had awakened from his nap and was glancing around the restaurant with glittering eyes.

I'm old fashioned enough to cling to the 15% rule of thumb for tipping. I slipped a $50 bill under the edge of my plate and collected my briefcase. The last I saw of the dinosaur, he was still huddling beside the teapot.

The cashier was listening to the news on the radio. "Enjoy your meal?" he said, as I paid my check.

". . . and a thirty percent chance of dinosaur showers tomorrow," the radio said. I frowned and made a mental note to buy an umbrella.

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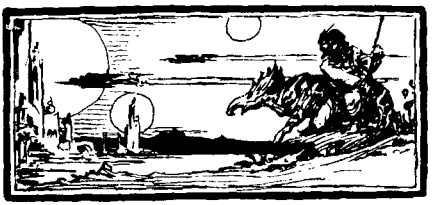
Outside the restaurant the smoke from the coal burners was so thick it almost made me sentimental for smog. I put on my mask and jogged all the way home.

When I got there I found Kaye standing in the middle of the apartment with all her clothes spread out around her. "They just announced on the radio that the big timejump is definitely set for Tuesday," she said. "What should I wear?"

I thought about the restaurant cat.

"Track shoes," I told her.



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At age 26, Mr. Kube-McDowell is starting his fifth year teaching middle-school science in a very small Indiana town. He was born in Philadelphia, grew up in Camden NJ, and thus is still adjusting to Indiana and small towns. He's been serious about writing for about four years; "Slac/ /" is his fourth SF sale. Hobbies (in the small time left over from writing) are reading and watching movies, especially Citizen Kane, Forbidden Planet, *or anything with Gene Kelly.*

Against regulations, Terence Calder spent two hours of his last sleepmode aboard *Cimara* in the language lab, worrying over the troublesome Semu verbs. He knew his language skills were marginal for a Contactor; and the Semu verbs, marked by sounds more suited to an oboe than vocal cords (Quon, the linguist, called them pipe-sounds*), were to him unpronounceable. And what he could not pronounce, he could not remember for long.

Marisa, his partner, slept soundly in her compartment three bulkheads aft. With her superb language aptitude, she had picked up the Semu tongue as quickly as the crackers had been able to break it down. She had even removed three words from the "In Question" list of undeciphered terms. Calder glanced up at the list hanging on the language lab wall. Removing the remaining fifty-one terms from it was just one of his and Marisa's tasks, beginning with planetfall tomorrow.

The next morning the ship's gig took them down to 10,000 meters, safely above prying Semu eyes. From there they were on their own; the tiny gravwarp generators in their leg pouches would permit a controlled freefall to the uninhabited region below. Marisa went first, clad as Calder was in the orange-red hue of the Semu sun. By the time Calder wriggled out of the embrace of the gig pilot, Marisa was a mere dot far below.

* /, / /, and / / / are the graphemes adopted for the three Semu pipe-sounds. The pipe-sounds, which are made with the breathing tube rather than the vocal chamber, are polytonal; however, a workable approximation can be made by whistling the first harmonic (/ = 270 cps, / / = 461, / / / = 908). It has become common for non-linguistic personnel to say "slac-whistle" (or equivalent).

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Then he, too, was out of the chute. In the exhilaration of the first moments of freefall, he took his eye off Marisa, and then was unable to spot her. No matter; the gravwarp guidance system would bring them to a side-by-side landing.

Even after three months over Semu, the bluish surface rushing up at him seemed unreal; Calder was from a planet dominated by green chlorophylls. No amount of observation had been able to remove that sense of strangeness. Calder shook off the feeling and concentrated on the fall itself—the easy, peaceful glide down.

Then, as the ground grew near, Calder's arms and legs became inexplicably limp and unresponsive. He began to tumble slowly, and was unable to halt the motion. The gliding turned to falling, and his peace to distress. His ears heard a shouting his mind did not understand. But there was no time for puzzlement; the ground was too close. As the blue Semu countryside rushed up to embrace him, Calder tried and failed to remember the Semu verb for dying.

The tech looked uncomfortable, like a dog expecting to be struck. "Captain?"

"Yes, Nixon."

"I'm not getting any biotelemetry from Terry and Marisa."

"Lost signal or flat trace?" Captain Lanton half-rose from his chair.

"Lost, sir."

Lanton sat back. "I was afraid you were telling me they're dead."

"I think I am, sir. They don't answer my signals."

Lanton frowned. "Let's take a look at the recordings. And hold off on the landing on the far side."

"I already took that liberty."

By the time the recording ended, most of *Cimara's* small complement had formed a solemn half-circle at the perimeter of the tech room.

"High fever and then nothing," Lanton said to no one in particular. "EEG normal, even calm."

"Yes, sir," Nixon said, stepping forward. "If it had just cut off I'd say it was an equipment problem, or interference."

"Did you track them?"

"They made planetfall on the beam exactly."

"Time of LOS?"

"Five minutes after landing, perhaps a little more."

"And they didn't signal us."

"No, sir. Not a peep."

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Lanton drummed his fingers on the console.

"Nephei and Quon will follow them down, if you'd like," Nixon offered tentatively. The Lyraen couple nodded.

"No. No second team."

"Yes, sir. What, then?"

"Put us in synch orbit over the site the next pass. Send the gig down now to search from 5,000 meters." He stood. "Let me know the moment they have anything. And check out a mobicom."

"Yes, sir." Surprise showed on several faces, including Nixon's. The mobicom, a powerful communications unit wedded to a gravwarp, was ordinarily used only after a team had set up relations with the planet's inhabitants.

"One more thing," Lanton said, pausing at the door and jabbing at them with a finger. "When you update your logs, they're missing. Not dead. Missing."

Lanton sought the privacy of his compartment during the fifty-minute wait until they were over the landing site again. "I should have had us in sync already," he started on himself when he was alone. "Followed them down with a sight-sound peeper or have them carry one—"

He stopped berating himself when he realized he was merely forecasting the conclusions of the inquiry board. Point was, no ship had ever lost a team on planetfall before—later, certainly, but not in the first five minutes. If there had ever been any special precautions, they had long fallen out of use. Getting on the planet had always turned out to be the easy part.

The details of contact with underdeveloped planets—no other kind having yet been found—had been worked out in theory by the exopsychologists and in practice by the Service. The crucial step was to monitor the communications of the inhabitants from orbit, and let a team like Nephei and Quon use a linguacomp to crack the language. Or if, like Semu, the planet had no advanced communications, plant a selection of sight-sound peepers. That took longer, since conversational language was invariably harder to decode than broadcast formal.

Then, language in hand, simply go meet the inhabitants. When a new animal approaches you speaking your language, it gives you pause—pause enough for the Service to establish contact with twenty-two intelligent, thriving species. There were some curious similarities among them—each was top predator on its planet, entering or facing the crisis that comes when evolutionary program-

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ming becomes outdated. The knowledge that they were not alone had helped two or three species totter back from the brink, and only one species ended up worshipping man—a good scorecard.

The rest of the procedure was mere detail. Wear the color of the planet's primary sun: the safest color, given the nearly universal sun-worship of surface dwellers. Display as little technology as possible—the only devices carried were the gravwarp generators, and even those were integral with the jumpsuits. The biotelemeters and microradios were implants—the former in the chest and the latter in the left pinky. Planetfall was made in an uninhabited region, to avoid mass reactions and let the Contactors choose first contact. Finally, teams of two gave an accurate picture of human biology, allowed for complementary abilities, and were small enough not to constitute an invasion. An unvarying, reliable formula.

Except for this time. And he, Aldis Lanton, was faced with answering the question that no one had ever had to answer before: *what next?*

It was not a question for long. The Service's contact captains were a special sort. Typically, they had the lowest I-score on their ships, in part because it was undesirable that they be bright enough to be erratic. What was desirable was a certain firmness of mind, a decisiveness in the face of both too little and too much detail. With a mission by its nature unpredictable, and a crew of talented, occasionally temperamental specialists, the ship's captain had to be a locus of calmness.

And Lanton was one of the best, because he understood his role. Twelve years ago he had faced the realities of a shrinking military and his own personality, and transferred to the Advance Exploration Service. Though he committed himself to becoming conversant in all the contact skills, and pioneered the now-common practice of requiring the entire ship's complement to learn the new languages, he would have been respected and successful without those acts. And when Nixon finally knocked and stepped into the cabin, Lanton had things clear in his mind.

"No sign from 5,000, Captain. Shall I send them lower?"

"No point—if the team were still on site, the sensors would pick up their telemetry. Correct?"

"Yes. It seems the next step is to put a team on the ground."

"Yes. But differently this time. Is the mobicom checked out?"

"Yes. I don't—"

"It's their planet," Lanton said, standing. "We were ready to contact them. There's apparently something critical we don't know

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about the planet. Let's get their help."

Semu—the planet. Geologically unremarkable. Smaller than Earth and more dense—net effect, a slightly higher surface gravity. A day of 29.2 standard hours. Two continents, the smaller northern one permanently ice-encrusted. The larger, dubbed Drumstick by Quon because of its shape, wrapped two-thirds of the way around the southern hemisphere. Almost 60 percent of it was rugged highland, including a range of inner mountains which were low but forbiddingly severe. A semi-circular plain of rolling lowlands on Drumstick's larger western end, almost enclosed by two fingers of highlands, contained nearly all the fertile land. Biologically, Semu was marked by short food chains. And, like most planets with a variety of life, Semu had large plants that were not trees but would be called such, and small plants that were not grass but would suffer the misnomer. Blessedly, it did not seem to have insects.

Semu—the people. Cell-based and humanoid, but clearly not human. Aside from the usual variations in sense organs, musculature, and so on, two features clearly set them as a species apart. The Semu head was articulated much like a Terran owl's, capable with its loose-skinned neck of rotating through nearly 400°. Moreover, the Semu were ambidirectional—that is, their arms seemed to function as well in back of their bodies as in front. They were also extremely pair-oriented; in nearly five months of observation, only twice had a Semu been seen more than twenty meters from his *otati*, or mate. Total population: perhaps 100,000, in over 2,000 villages scattered over the coastal plain and fertile lowlands. They were gatherers rather than farmers, and the villages were separated by the invisible, mutually respected lines demarking their food territories.

Lanton studied the reaction of the Semu villagers to the suitcase-sized mobicom descending toward them. Nixon brought it in on one side of the village, so only a dozen Semu paused to note its approach. They watched dispassionately, neither drawing near nor fleeing, and then most turned away. It was not what Lanton had expected.

Only two pairs remained interested long enough to see Lanton's face appear and hear his greeting: *"Bantroi."*

"Bantroi," echoed the nearest Semu, his head twisting toward his *otati*. The second Semu repeated the greeting.

"I am Aldis Lanton," said the captain. "What you see is not my body but a *kisemu* I have sent you so that we may talk." He used the Semu word for statue or portrait—literally, "not-self."

"Yes," said the second Semu, moving forward and nudging the

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first aside. To Lanton's ear, both voices were male.

"I am a visitor—*kiranchi.* Two of my companions are missing near your village. We will come and meet with you and search for them. Is it to be so?" A Semu request was a statement of the future, then a request for confirmation.

"It is to be."

Lanton waited, expecting a question, but none came. "Before nightfall," Lanton said finally. *"Bantroi."*

Switching off, Lanton shivered. There seemed to be nothing behind the yellow Semu eyes—a vacant look, as though the owner were out to lunch. He chided himself for anthropocentricity and turned to the others in the room.

"Mandy, you and I will make up the team."

Mandy Wells looked up, startled. The exobiologist was *Cimara's* newest and youngest specialist, and had kept to herself enough that she was more like a passenger than part of the team. She had come to them in the usual way—basic training in a top Earth school, advanced work on the Jovian moons, research on a "safe" planet (in her case, Kruger 60-E), and two intern missions at the elbow of an experienced XB. Semu was her first solo mission, which Lanton saw as the reason for her reticence. Whatever the reason, Wells did not give much of herself away. Her small smile at being selected was comparatively revealing.

"Thank you, sir. Captain---" she began hesitantly.

"Yes?"

"I know it's difficult to tell with ET's, but they didn't seem very surprised."

Lanton's expression was sober. "I know."

The gig pilot set the tiny ship down gently within sight of the village walls, then lifted off again as the humans walked side-by-side down the knoll to the gate in the low village wall. A pair of Semu waited there; they seemed agitated, heads turning repeatedly through full circles. As the humans drew closer, other pairs appeared in the yard just inside the wall.

"Bantroi," Lanton called as soon as he thought they would hear a normal speaking voice.

"Bantroi," said one of the newly arrived Semu. "I am Gision Ah, Protector of the village of White-hill. We celebrate your safe arrival."

"We celebrate your continued health," responded Wells.

"Have those who are missing been found?" Gision Ah asked matter-of-factly.

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"No. They are still missing."

Those Semu who stood watching muttered at this. "Slac/ /," one said clearly.

"Where did you last know of them?"

Lanton pointed east. "Three hills—two *kai* walk-time."

"And the missing are like you?"

"They are."

Gision Ah made a sweeping downward motion with his hand, the fingers coming together to touch at the tips—the Semu gesture for "gone," equivalent to a shrug of hopelessness.

"Have you heard anything of strangers in that area?"

"We know nothing of the world there."

"Your travelers—hunters—"

"Nothing."

Wells stepped forward. "We are *kiranchi.* We ask your help."

Gision Ah's *otati* spoke, a harsh, incomprehensible outburst. Looking back, Gision Ah answered with equal intensity, then said to Lanton: "You will wait for us. It will be so?"

"It will be so," Lanton said. Immediately a pair of the large Semu ushered the humans away from the gate and deeper into the village. Surprised, the humans let themselves be steered into a small, sturdy building. It was dark inside; the windows were mere slits in the wooden wall. "Prison?" Lanton wondered aloud.

Wells moved to the doorway and looked out. "Three pair of them standing close by, including our escorts. And this door is lockable—there are holes and loops for vertical crossbars."

"Come have a seat." As she joined him, he continued. "Some of those pairs are homosexual, correct?"

"Oh, yes. They seem to place no stigma on it—male-male and female-female pairs are as common as mixed ones. It was part of the report I submitted on the Semu social organization."

"Ah. Remind me of your conclusions." Lanton remembered the report clearly; he was trying to draw her out.

Wells nodded. "Generally, there is a strong correlation between the formal social acceptance of homosex and crowded niches. But that doesn't seem to be the case here—the food supply appears adequate for five times the population."

Lanton was mildly disappointed; her tone was professional and deferential, not personal. "So?"

"So the pairing patterns are just variation, not adaptation. Unless this *is* overpopulated for Semu sensitivities."

"Or their diet is more specialized than we realize." Lanton grasped

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the pinky of his left hand and pulled, as if he were unjamming a finger. "Nixon?" he said experimentally.

"Here."

"We're a bit isolated just now. Try to find out what's happening with the group that greeted us."

"Call when I have something," the tech promised. "Nixon out."

Gision Ah sounded the three pipe-sounds, and the room fell silent. "Nepion Tu has asked for a sharing-time concerning the *kiranchi.*"

"I wish to know what Protector Ah sees," Nepion explained.

"Protector Ah does not see clearly, and would accept the sharing of others on this question."

"Clarify."

"What is done? They are not slac/ /; they are not lessers. Are they Semu? They are two, and yet not *otati.*"

"They are insane," spoke up one of those who had watched the humans at the gate. "They wood-walk with eyes down and ahead." He made the 'gone' gesture. "They are insane."

"They are strangers," offered another.

"They speak language—"

"Like a poorly trained child."

"But still they speak."

Gision Nu rose. "Our ways permit only one response. They have demanded *kiranchi* with us. *Kiranchi* must be given."

"They are not Semu," protested Nepion Tu. "Would you grant *kiranchi* to a slac/ / if it demanded it?"

"It seems to be a meeting over your status, sir. I don't dare move the mobicom for fear of alarming them, so I've got the long mike on them—but the gain isn't too strong. Here, Quon wants you."

"I'd say we misread *kiranchi,*" said the linguist. "It's not 'visitor', it's more to a temporary communal membership—a reciprocal relation between villages, apparently."

"How are we doing?"

"Hard to say. Several 'In Question' terms have shown up already—brings an element of uncertainty into any analysis."

"Keep listening. I don't like uncertainty. And give Mandy a signal feed so she can help."

"Yes, sir."

"Where is their village, where we may claim *kiranchi?*"

"If they are from it, it must exist."

The argument went on, the alignment of delegates shifting on

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nearly every new point that was raised. "I could make more progress with a committee of snakes," grumbled Nixon, eavesdropping from *Cimara*. But Gision Ah seemed content, sitting back and staying out of the discussion.

Three hours later, the vigor of the debate undiminished, the door to the building opened and a young Semu poked his head in. *"Ginu,"* he called, and without a further word the delegates hurried from the building in the ubiquitous Semu pairs.

It was about that time that the signal from the mobicom died.

"What do you want me to do?" Nixon asked plaintively. "If I recall it for maintenance or send down another, they may not take it well. We've shown them a lot of technology for this point in the contact."

Lanton decided quickly. "Do nothing. The information hasn't been that valuable. We have to make things happen from here, and we've just been sitting."

"Good luck, sir."

"I'm a believer in making your own luck."

"Yes, sir. Uh—Captain? Think the Semu tampered with the 'com?"

Lanton exhaled heavily. "I don't know."

"Check in in three hours?"

"Yes. Lanton out." He looked expectantly across the room at Wells. "Ready to go?"

"More than," she said eagerly.

But this time, the door would not open.

Without benefit of clock or crier, as sunlight began to reach the village of White-hill, the delegates migrated back to the meeting house.

This time, however, Gision Ah reined in the wandering thoughts. "We know of only one thing that may be done. *Kiranchi* has been claimed, and will be granted. But there is more. They seek their missing in the open lands. If we permit them to search freely—"

Several of those in the front circle made the sign for 'gone'.

"Yes. More is called for from us."

"There must be a *tiranon,*" said Nepion Tu.

"There must be a *tiranon,*" Gision Ah agreed. "But because they are strangers, it is required of no one. Return to your homes and seek out those who will serve. Send them to me. When a *tiranon* has been found, we will proceed."

Aldis Lanton had taken a long time to fall asleep. He and Mandy

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had found out at the cost of bruised hands and shoulders that the door was strong enough to hold them, and at the cost of their voices that no Semu could be persuaded to release them. Nixon's offer to intervene tempted him briefly, but in the end he decided to wait until the situation was clearer. Still, he could not seem to close his eyes, his hopes for finding the Contact Team alive having reached a new low.

In the morning, the posts were noisily removed and the door thrown open by a young Semu. "*Ginu* ends," he said, then disappeared from the doorway.

When Lanton tried to follow and get an explanation, however, he found himself quickly surrounded by Semu—not threateningly, but purposefully.

"I will talk with Gision Ah. It will be so?"

"It will not," was the answer. "He is occupied."

Lanton frowned. "We must begin looking for our missing companions. Too much time passes."

"It will not be," said the Semu who barred his path. "*Kiranchi* has been granted, the *tiranon* forms. Wait."

His frown deepened, and Wells touched his arm. "We're not in danger," she said in English, "and it sounds like we've been granted a protected status. Perhaps we should give them more time."

"Time is the problem," Lanton said simply.

"I think it would be a mistake to force the issue now. There's no indication they don't intend to help us."

The forcefulness in Wells's voice was a welcome surprise. Perhaps, Lanton thought, she's starting to find her professional backbone. But he was not as convinced of their safety as she was.

"We will wait—two *kai,*" he said to the Semu. "Come on," he said to Wells, and ducked back inside the hut. Sitting down, he signaled the ship, aware that the Semu way of doing things was wearing on his patience.

"Put Quon on."

There was a short silence before they heard the Lyraen's voice. "Yes, Captain?"

"A translation on *tiranon,* please."

"Repeat?"

"*Tiranon.*"

"Must be a new word. Any contextual clues?"

"I was thinking it might be 'search party', Captain," offered Wells.

"Um. Translation on *ginu.*"

"Still on the 'In Question' list," said Quon. "Best guess would be

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'sunset', except we already have a word for it and they're very economical in their vocabulary—"

"I don't want might be, I want to *know,*" Lanton said heatedly. "Start doing your job." He looked up to see Wells considering him curiously. "What do you want?"

The look vanished. "Nothing."

Near noon, the Protector came for them.

"We are ready," he said simply, and they followed him out into the sun. Standing there were a dozen Semu, each carrying a sort of rigid sling that the humans had seen used in play—it was one of the three Semu tools they had identified. But the short five-pointed arrows that they were also carrying were new. It was clear that the arrow was intended to fit in the groove along the upper side of the sling.

The band moved off to the nearest village gate, where they paused while Gision Ah moved among them, rubbing a yellow-white cake across the arrow points. The Semu gabbed animatedly as they waited, then fell silent when Gision had finished. Offering the humans no explanations, the Semu leader moved to the front of the group and set the pace with long, smooth strides. His *otati* followed close behind him, stepping into his footprints with a precision that seemed practiced, her head facing back and sweeping slowly from side to side.

The other pairs arranged themselves similarly, spaced at regular intervals across the open meadow. After an exchange of glances, Lanton and Wells fell in behind them.

"We haven't seen that sling used as a weapon before," said Lanton.

"No. But I have seen them walk this way—the young have a kind of game they play," she said, watching them intently.

"That cake must be some sort of poison."

"Or it could have ritual significance—the Semu are big on ritual. I think this is what we wanted, though—a search party. Look at the way each one of them only scans a small part of the surroundings—but between them not a bit is missed. Remarkable example of social coordination, don't you think?"

"I think Gision is going too fast."

The countryside was gentle in slope, but the long-legged Semu were not dawdlers—they proceeded without pause at a rate awkwardly between human walking and running. For the first hour, the *kiranchi* kept up, breathless. But as they drew nearer to the

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landing site, legs tired and spirit flagged.

It happened then, in one terrible moment. A shadow flashed across the ground unnoticed. At a noise, no more than a breathless rush of air, Lanton's eyes flicked upward. There was not enough time to sort out the impressions—he smelled something pungent, saw claws, sensed *close*, and threw up an arm in self-protection. Something hard and sharp struck his arm with surprising force, glanced off, and raked his head.

Wells spun at the sound and saw Lanton spin slowly into a jumbled pile of limbs. "Slac/ /," cried a shrill Semu voice as the creature glided overhead on its sail-like wings.

A flurry of five-pointed arrows filled the air, and three came to rest in the flesh of the attacker. The slac/ /'s grasp on the heavy stick it carried in its lower claws weakened, and the stick fell to the ground; a moment later the creature folded its sails and followed it, thudding against the ground fifteen meters from where Wells crouched. With an effort she released the air in her lungs and hurried to Lanton's side.

Lanton's eyes were closed and his temple bloody; his left forearm made an angle of 40° where the designer had not intended one to be. But he seemed to be breathing regularly, and Wells took time out to signal the ship. "Lanton's been hurt—get the gig down here ASAP."

"Hold on." After a pause, Quon's voice returned. "Nephei's boarding now. Six minutes or so—will that do it?"

"Yes." She looked yearningly in the direction of the slac/ /. "You can cross slac/ / off the 'In Question' list—it's what the Semu call the flying species that attacked Lanton. About a meter long, wingspan about the same—ruddy orange color."

"With a pipe-sound, it should be a verb."

"For attack, maybe." Looking down, she saw that there was considerable blood on Lanton's face. "Nephei coming?"

"On the way," Quon reassured.

"Wells out." Kneeling, she wiped away the blood and found, to her relief, that there were no deep gouges—the blood was from capillaries torn open by the stick scraping across his face. Reassured, she checked his pulse and breathing again, then crossed the meadow to the circle of Semu. Shouldering her way to the inside, she stood beside Gision Ah and stared at the creature.

The slac/ /'s wings were simply loose flaps of skin connecting its upper limbs to its body, though in flight they had the shape of a parasail. Its legs had enormous extensor muscles, and ended in pow-

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erful claws that were not at all birdlike. Similar but smaller claws were at the end of each sailstrut.

"The stick it carried—" she said to Gision.

Gision Ah struck himself in the throat with his forearm. "The slac/ / neck-break."

Wells suddenly felt exposed. "No one is on lookout now," she said. "Couldn't there be another nearby? Are they never found in groups?"

"The slac/ / dislike each other's company."

"A *kiranchi* from Low-tree told once of a *tiranon* that slew two slac/ / in a single day," said Gision Nu.

"The people of Low-tree are known braggarts and liars," said Gision Ah. *"Beyta,"* he barked suddenly, and the Semu began to scatter in all directions. Two headed for Lanton, and Wells hastened protectively back to his side. But the pair continued on with barely a glance at Lanton, and disappeared into the woods as the others all had. Before Wells could wonder about it, the gig swept down and settled with a muffled roar a hundred meters away.

Nephei examined Lanton quickly and sniffed. "Nothing serious." Producing an airsplint, she worked to immobilize Lanton's arm. "Help me get him to the gig."

The Lyraen woman was strong, and Wells felt unneeded in the four-hand carry. The feeling was confirmed when Nephei changed her grip and carried him up the ladder and into the gig herself. Arranging him on a flight couch, she turned and poked her head back out the hatch.

"Coming?"

"I think not."

"Standard prac says not to be groundside solo."

"I'm not. I'm with them," Wells said with a jerk of the head.

Nephei glanced up. "Speaking of whom—what the hell are they doing?"

"My specimen!" cried Mandy, running toward the gathering. But she was too late; flames were already leaping up through the mound of brush the Semu had collected. Atop the mound was the slac/ /.

"Gision Ah," she called across the circle. "I need to—" She stopped, frustrated. They had learned no Semu word for 'study'. "To look at it."

"The fire will put the smell of death in the air—no slac/ / will come for days. It will be safe to feed here." The flames leaped up and hid Gision Ah's face from her.

Horrified, Wells watched the slac/ / writhe until its flesh turned black. Once she had seen a boy torment a Terran worm with a hand

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lens; the feeling of mixed fascination and disgust was the same then and now.

Though Wells pleaded with Gision Ah to go on to the landing site, he would not hear of it. "The *tiranon* has known fire, and darkness comes. At *ginu,* the world belongs to the slac/ /."

He strode off, and Wells hastened to fall in beside him. "The door to our sleeping-place would not open once." Semu was sparing with time words; anything past was *esu*—once.

"Yes," acknowledged Gision Ah. "A Semu forgets—the madness comes. He must be helped to remember."

"The slac/ / see well in the dark," Wells suggested.

"For slac/ /, there is no dark."

An odd speculation came into Wells's mind, but she dismissed it quickly. "We will look for the missing again tomorrow. It will be so?"

Gision Nu clucked reprovingly—an unnerving cross-species parallel—and said, "It will not." She looked to Ah.

"It will not," he agreed. "You must find a new *otati,* now that yours is lost."

"He's not lost. He was taken back to have his injuries attended to."

Gision Ah said nothing but exchanged a glance with his *otati.*

"We must look again tomorrow," Wells pressed. "It will be so?"

"It will not," Ah repeated. "You must find a new *otati,* now that yours is lost."

Wells took the Protector by the arm and stopped him. He looked at her blankly.

"Gision Ah, what am I?"

The blank look continued.

"Am I a Semu?" She held their forearms up side-by-side before him. Behind them, the rest of the *tiranon* had come to a stop.

"No—you are not Semu." Ah seemed disturbed.

"Then what am I? Where do I come from? What took Lanton away?"

Again the blank expression. "You are not Semu," he said slowly. "You are not slac/ /. You are not lessers." Then, as though he had solved a great puzzle, he pronounced, "You are *kiranchi.*" Satisfied, he resumed walking.

Wells stood and watched him go, astonished. The Semu had not asked them a single question about humans, had never reacted in the least to the coming and going of the gig or the mobicom. She

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had noted it, of course, and attributed it to caution.

Now she began to wonder—could it be that they simply weren't curious?

Mandy Wells squirmed uncomfortably on the sleep-bench and stared up toward the ceiling, somewhere above her in the darkness. The last few hours had been the best since they had left port—finally there was no one looking over her shoulder, ready to judge and find her wanting. When the gig had left, Wells had felt a wave of relief. For a while, at least, the pressure to prove herself was gone.

But she still could have been happier. She hated the guessing—pretending that it was possible to somehow make human sense out of alien strangeness. She hated guessing wrong still more—and she had a deep suspicion that she had been very badly wrong about the Semu.

On top of that, there was something troubling about the attack on the captain. The use of the neck-break stick could be overlooked; many more animals used tools than made them. But why had the attack taken place at all?

At first, Wells had dismissed it easily. Just as the Semu are sensitive to "mad" behavior, so too must be the slac/ /. She and Lanton had walked as a human couple, not a Semu *otati*—and they had been singled out just as any predator singles out the cripple in the herd. But now, under closer examination, that explanation fell apart. What would the slac/ / have done with Lanton had it been successful? It wasn't a flier, merely a glider; and couldn't have carried him away. Nor could it have fed, with a band of arrow-slinging Semu forty meters away. The attack defied survival instinct.

Then the scratching began.

It was above her in the dark, on the roof outside the shelter. Wells sat up and clutched the edge of the sleep-bench tightly in both hands. The scratching circled the roof twice, then stopped. A moment later another sound began at the door—the sound of the lock-posts turning in their holes in the ground. Finally the door itself came alive, shaking back and forth against the lock-posts and the frame. The shaking was almost frantic, and Wells had little doubt about what was outside the door.

At last, to her relief, the noises stopped. But it took a long time for her to relax enough for sleep to come.

In the light of her second dawn on Semu, with the visitation more tantalizing than frightening, Wells was determined to find a slac/ /

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to observe. But Gision Ah refused to help, and when she tried to leave the village alone a small crowd of Semu converged on her at the gate, lovingly but firmly turning her back. When a second effort was just as fruitless, Wells retreated to the center of the village and contacted *Cimara.*

"Morning, Mandy," Nixon said cheerfully. "I wasn't five minutes from checking on you. Night pass uneventfully?"

"More or less. How's the Captain?"

"Out cold right now—Nephei's warming up the microknitter to fix that broken wing. As soon as she's done, she and Quon are coming groundside to start formal contact procedures."

"What about me?"

"You'll be staying—to concentrate on the slac/ /. The Captain wants us to give the Semu something to help them with that problem."

"Isn't that a bit premature?"

"He doesn't seem to think so—and you can't exactly discuss it with him now. Oh, and another thing—that mobicom that went out. Chip failure. Not tampering."

"What about Terry and Marisa?"

Nixon hesitated. "We've come to the conclusion that there won't be much to find."

"You're writing them off."

"Not exactly. But it's pretty unlikely they're going to show up alive, wouldn't you say? After all, without a little help from the Semu, you wouldn't be in much of a talking mood yourself."

"I'd be dead, you're saying."

"And the Captain. You disagree?"

Wells frowned. "No. That's probably right. Wells out."

Gision was playing *tiranon* with five young Semu when Wells found him. "I have to talk to you."

"I knew the need once—Nu is my third," Ah said, waving the young ones away. "Share."

"Protector Ah, I know what you're trying to do. You're convinced I'm insane because I don't fear the slac/ / every waking moment—and because I've lost my 'otati'. You're trying to save me from my madness. But it isn't necessary!"

The Protector waited patiently, and Wells continued. "It's become a problem—I can't do my work. I can care for myself. I'm an experienced—*kiranchi.*" It wasn't the word she wanted, but the maddening Semu language straitjacketed her. It had no word for exobiologist, of course, but it did not even have a word for explorer.

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"Please tell your people to leave me be."

"When I lost my first *otati,* the madness stayed for fifty days," Gision said gently. "I did not gather food—I longed to kill slac/ / singlehanded. But my friends were good to me, and locked me in a sleeping-place, and I became well again. How can I tell your friends not to help? You ask me to take your madness and spread it among them."

"I'm not a Semu," Wells said heatedly. "Forget *otati,* forget madness. Look at me—if I'm not the same as you on the outside, why should I be the same on the inside?"

"The madness runs deep in you, *kiranchi,*" said Ah, ever gentle. "But we will help you, do not fear."

Wells stared at him, then turned and stalked away. Behind her, Gision Ah called loudly to the nearby adults, and Wells's steps became running strides. She headed unerringly for the nearest gate, meaning to test at last the strength of the slender Semu arms that barred it.

Though there were five of them, the struggle was brief. Wells broke free and ran for the forest, leaving the Semu dismayed and largely prone behind her.

Heading toward the nearest portion of the Wishbone, Wells ran herself to near-collapse through the wood. When she felt she had won enough time from the Semu's doubtlessly concerned pursuit, she slowed to a walk. Though finding a slac/ / would be, on the face of it, difficult, she had the idea that given a chance to they would locate her.

Protecting her back by resting against a trunk at the edge of a large clearing, Wells sat down to wait. The slac/ / would have to approach head-on, and an attack would be difficult.

A new vision of the Semu took form in her mind as she waited. *Tiranon* was not search party, but hunting party. *Otati,* the strongest relationship in their society, was not reproductive-mate, but partner, or buddy as in buddy-system. The slac/ / seemed to thoroughly dictate the Semu way of life.

As she mulled over the new observations, a graceful orange-red creature glided down to settle in the middle of the clearing. Its lower claws were empty.

"Now we'll find out what sort of creature you are," she murmured, leaning forward. "I prefer my specimens live, anyway." The slac/ / and the woman considered each other across the expanse of blue meadow. The gaze of the slac/ / made Wells uncomfortable in a way

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the Semu never had.

"Do you speak? Do you have language?" she said loudly, hoping not for understanding but to encourage the slac/ / to display similar ability. But there was no response.

"Are you the one that came last night?" she asked, standing. "Or is there a nest of you somewhere near?"

The slac/ / took two awkward steps toward her.

"A little test, then. It's easy, you can do it. Give me something I can show the captain." She extended a closed fist, then uncurled a single finger from it.

With what to Wells was painful slowness, the slac/ / unfolded its right sailstrut and flexed one, then two of the diminutive claws at the end.

Resisting a premature smile, Wells raised one, then two, then three fingers. She watched eagerly as the slac/ / uncurled its last two claws, then shifted its weight from foot to foot.

"Beautiful!" she said, applauding. "There *is* something behind those eyes. You gave me sequence, not simple imitation. Use of symbols and number sense. It's a start. God, if you could only talk to me." She tugged on her radio. "Maybe this is enough."

"Enough for what?" crackled a voice.

"Wells here. Is the Captain available yet?"

"Didn't know you wanted to talk to him," said Nixon. "He's a bit groggy—can it wait? Or can I handle it?"

"Not really."

Nixon sighed. "All right. A word of warning—he's been rather humorless since we picked him up."

"Noted."

"Problem, Mandy?" Lanton sounded tired.

"How are you, sir?"

"Skip the pleasantries, please. What's your difficulty?"

"I've been looking into the slac/ /—"

"Good. I presume Nixon told you what I want done."

"He did, sir. I'd like you to reconsider. There are some questions that should be answered first."

"Such as?"

"Such as why they're on the flatlands at all—they did *not* evolve there. Their exact relationship to the Semu—"

"*Cimara* is here to find and contact intelligent life, not write the final text on this planet's ecology," Lanton reminded her. "You can leave some things for those who follow."

"I know. But there are indications that they're intelligent."

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"What indications?"

"Number concept, for one thing. And I believe they're trying to contact me—"

"The way they contacted me? Come now, Mandy, you're dragging your feet. Don't you want to give the Semu a chance to devote their energies to growth and development? We gave the k't'p'ch a selective pesticide, and the Mau vaccination. You did excellent work with the killflies on Kranh—how is this different?"

"We missed the slac/ / completely—what else might we have missed? Our planetary survey is suspect—I want to go back and review our procedures. In the meantime, we should hold off on any other contact."

"Contact's already begun, and we don't have the kind of time you seem to be implying. Mandy—don't lose confidence in your work because I don't know how to duck. *I* haven't lost confidence. Just think of the slac/ / as a natural enemy of an intelligent species, and figure out what to do about them. In nine or ten days we'll be on our way home."

"Nine days," she echoed hollowly.

"Yes—sounds attractive, doesn't it? Quon says they're progressing well. Report in at the regular time."

"Captain, I'm standing here looking at a slac/ / who—"

"Good. Find out how to kill it. Lanton out."

Wells looked unhappily at the slac/ /. "We have a problem," she said softly. She stepped toward the creature, and it turned and waddled away. Then with a boost from its powerful legs, the slac/ / launched itself into the air. As it rose, it filled its sails with air and glided downhill, holding an altitude near two meters. Dismayed, Wells watched it go.

At the bottom of the slope, however, it banked and landed, looking expectantly back at Wells. Opening its mouth, it filled the clearing with a modulated trill that said to Wells as clearly as if it had been in English, "Aren't you coming?"

Jubilant, she set off after it. The slac/ / waited until she caught up, then pushed off again to glide alongside her. As it lost momentum, it would near the ground and the powerful legs would lash out again. It was a strange feeling to run within arm's reach of the living glider.

But it was a good strangeness. Her legs were tireless, her breath came easily. She found that she did not even care where they were headed—to share this moment, this place, with it was enough.

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Before long, it became clear they were headed for the isolated outcrop of bedrock known to the *Cimara* as the Boil. As they neared it, her escort sent excited cries on ahead. Answers came back in many voices, and when she was finally led into the rock-encircled nest at the base of the Boil, there were fifteen slac/ / waiting. At the sight of her the air became thick with trilling.

Wells walked to the center and sat, to bring her eye level down to theirs. A fuss was being made over her escort, but most were studying her and jostling for a clear view.

Finally one waddled a few steps closer to her.

"*'antroi, kiranchi,*" trilled the slac/ /. The voice was high-pitched and slurred, but intelligible.

Wells was stunned. "*Bantroi.*" she managed to say. "I am Mandy Wells."

"I am (double-whistle, click)," said the slac/ /. "*'andy 'ells—what are you?*"

"Captain, there's something down here you should see."

"I'm not planning on coming back down. Can't you handle it?"

"It has to do with the slac/ /."

"Pass it to Quon then. I don't need to be involved in the details."

"I'm afraid you do. There isn't going to be any slac/ / control program."

There was a pause. "I think perhaps you'd better come on back up to *Cimara* and explain that."

"I can explain part from here. The rest you have to see. The slac/ / *are* intelligent, Captain—there's no question now."

"That's a conclusion. Give me the data."

"Well—they have language—"

"Many species communicate with sound."

"Captain, some of these creatures speak Semu."

"*Mimicry is not unknown, is it?*"

Gritting her teeth, Wells continued. "They're socially organized—"

"So are bees. Are they tool-makers? Do they have writing?"

"No. Not that I've seen so far. But—"

"Aren't those the prime determiners? It seems to me as though you're losing both your objectivity and sight of your goal."

"It seems to me that your mind is closed on the subject of slac/ /. Is it guilt over Marisa and Terry, or self-pity?"

"Don't try home psychotherapy on me," Lanton said ominously.

"I'll use anything I can to break through to you. Captain, I'm sorry you were hurt—but so are the slac/ /."

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That took Lanton aback. "How do you know?"

"Come down and I'll show you."

"That's out."

"Then you're going to have to deal with me helping the slac/ / while you help the Semu."

"What are you saying?"

"I thought I said it quite plainly."

Lanton's voice was cold. "I don't like threats, especially from my own people. Come up here and present your case. That's all you have to do."

"Captain, remember that we said the Semu weren't surprised by us. We expected them to react to our alienness, to our display of technology—and they didn't. They *couldn't*. Does a cat wonder about electric lights? Is a shark impressed by a submarine? Is a baby awed by sleight-of-hand? The Semu lack the capacity for true intellectual disequilibrium. They didn't and don't understand who we are. But the slac/ / do!"

Lanton frowned. "Meaning what?"

"That we contacted the wrong species."

"That's nonsense."

"No—an educated opinion. And one you can't fairly contest until you see what I've seen—down here."

"Why do you insist I come down?"

Wells's face and sigh showed that she was perturbed. "Captain, I've always said that the true sign of an intelligent species is that when you point, it doesn't look at your finger but at the place to which you're pointing. *You* keep looking at my finger."

There was a pause. "You may be right, at that. All right—I'll come down."

Wells met the gig a kilometer from the nest.

"Stay inside," she said sharply when Nixon started to follow Lanton out of the gig.

"Why?" asked Lanton.

"It makes me uncomfortable to be one against your two."

"*You* make *me* uncomfortable," Lanton said shortly, but waved Nixon back. "Where are they?"

As though cued, three slac/ / burst out of the trees and glided down to settle beside Wells. Lanton shied back at their approach.

"Face of the enemy," he said. "How many times did you practice that entrance?"

Wells ignored the gibe. "The Semu's enemy, yes. But not neces-

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sarily ours."

"I realize now why I don't like them. They remind me of the witch's monkeymen from *The Wizard of Oz*. Know it?"

"Science fiction?"

"Old-time flat movie—saw it as a child. Not important. I'm here. You had something to show me?"

"I want to explain about the attack on you first. The one that went after us had lost a vote in conclave and acted on its own. It was one of the first to spot us, and urged we be killed to eliminate the threat."

"What threat?"

"What's my current assignment?" she asked pointedly.

"Um. But he lost the vote."

"The majority voted to 'wait and see'."

Lanton's hand went slowly to the heal-seal on the side of his face. (Double-whistle, click) advanced toward him.

"You are Protector Lanton," it said in Semu.

Startled, Lanton nodded.

"Why do you help your enemy against us?"

"*Our* enemy? The Semu?"

"Do they find your missing?"

"Can *you?*"

"I can take you to the place." (Double-whistle, click) launched himself, and the other slac/ / followed. Wells took a step, but Lanton grasped her arm firmly.

"How do they know?"

"They have the whole flatland under surveillance."

"Or because a predator can find old kills?"

"We'll see," said Wells, pulling free and starting after the slac/ /.

Lanton caught up to her in a few steps. "I don't know what to make of you, you know."

"What about the slac/ /? That's more important."

"I can see they have some intelligence," he said. "But so do most species."

"Not like this," she protested.

"But it's a sliding scale—there's no line that separates intelligent from merely instinctive. One graduates into the other."

"Admitted."

They ran in silence for a moment, then Lanton asked, "So what else have you found out?"

"They originally were highland creatures, capable of something approaching true flight using the updrafts. They're moving here not because they have to, but because they want to. In the highlands

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almost all their labor is devoted to feeding. In this richer habitat, that won't be true."

"They're conducting a war, then—they don't feed on the Semu."

"Yes. They have scout-soldiers everywhere, working alone but part of an organized web. The Semu are a race in garrison."

"My sympathies are still with the Semu—perhaps even more so now."

"I don't doubt that the Home Worlds would consider them our closest kin. But that's not the point, is it?"

Ahead, the slac/ / had come to a stop and were waiting. "You admit the Semu are intelligent," said Lanton.

"Yes—though I think it's of a lower order."

They reached the slac/ /, and (double-whistle, click) extended a sailstrut toward the ground. "Here."

There were two blackened circles, each a meter across. A few stalks of fast-growing grass poked up through the low mound of ash.

"I don't understand," said Lanton.

"The Semu have a ritual when they kill a slac/ /," Wells explained. "They immolate it."

"So two slac/ / were killed here."

"No." Kneeling, Wells raked her fingers through the ashes and came up with a slender bone. She handed it up to Lanton and continued sifting.

"This looks like a human radius."

"It is." From the ashes she plucked the blackened cylinder of an implant radio. "This is Marisa—or Terry."

"But the rest of the bones—"

"The Semu take souvenirs—trophies."

Lanton stared at her. "The Semu killed them? They thought they were slac/ /?"

"Not thought. They reacted to a particular set of stimuli—the color, diving—and ignored the anomalies."

"They ignored a lot, in that case."

"We've seen the Semu aren't very flexible conceptually."

Lanton turned the bone over in his hands. "But the biotelemetry—we should have seen they were dead. The EEG was normal—only the high temperature—"

Wells shook her head. "The substance Gision Ah used on the arrows was a tranquilizer. I don't think Terry and Marisa were dead until the Semu burned them. Your slac/ / wasn't."

Lanton drew a deep breath, then exhaled. "So little to take back," he said, staring at the ashes. "And now I have a problem, don't I?"

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"I hope so, sir."

Lanton toed the ash and said nothing.

"There are *two* intelligent species on Semu, and they're competing for essentially the same niche. The slac/ / have the individual physical and mental advantages, and the Semu are countering with social adaptation."

"And whichever side we come in on, wins," Lanton thought aloud.

"Yes. With all respect, I suggest it's not a choice we have the right to make."

"Is there any chance the slac/ / can be persuaded to return to the highlands?"

"None. They feel as though they have finally discovered a food heaven."

"To leave the Semu alone, then."

"That calls for a moral development neither side has come close to achieving."

"Working with both, then. Your opinion."

"The slac/ / are in a better position to take advantage of the contact. And is creating and juggling a balance of power our role—like we were lords of the planet?"

Lanton did not answer immediately. Instead, he signaled Nixon, instructing him to ferry the gig to them. Switching off, he gazed at the circle of ashes with a troubled expression.

"Captain?" Wells said softly.

Lanton rubbed at his right eye, turning half away. Wells knew he was not thinking of slac/ / and Semu but of his two dead crewmen. Finally he turned back.

"You enjoy complicating my command, don't you?"

"In this case, yes."

"You flirted with insubordination."

"I'm a naturalist first. I thought it worth the risk. Or am I being premature—what are we going to do? Do I need to keep on flirting?"

Lanton smiled ruefully. "Please, stop. There is only one option that makes sense to me. We'll do what any polite human would do when he accidentally comes upon an arguing couple—quietly leave and come back later." The slac/ / scattered suddenly at the approach of the gig. "Would you say they'll have this worked out in, oh, a hundred years?"

Wells smiled back, relieved. "A hundred years ought to be just about right."

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LETTERS

Of course we like to get letters from you! How else are we to know what we're doing right—or otherwise—? This applies not only to the story and art and non-fiction content of the magazine, but also to our distribution: we are very interested in your comments on how well we're reaching your local newsstand.

Letters to the editor should be addressed to us here at Box 13116, Philadelphia PA 19101. Letters on other matters—advertising, subscriptions, and so on—which are handled by the publisher's offices rather than by the editor should be sent to Davis Publications, Inc., 380 Lexington Ave., New York NY 10017.

Dear Sirs:

I am pleased to see that you have an annual index, but I have one suggestion to make concerning it. I think it would be better placed in the last issue of the year it covers, instead of the first issue of the next year. As the number of magazines and books on my shelf increases, I find I have to remove and store some of them. I remove all of a year's issues and store them. It would be more helpful if the index was in the last issue of the year it covers.

What happened to *A'sf* adventure magazine? I haven't seen or heard anything about it since the fourth issue.

I enjoy your magazine. I prefer short stories because I don't always have time to read longer stories. Your magazine seems to have a higher percentage of short stories than other science fiction magazines.

I generally read your magazine cover to cover. The only story I didn't read was "Peregrine: Perplexed." I generally don't judge a story by the first few paragraphs, but I found that story unreadable. Other stories by Davidson have been good, though.

Regarding mailing labels: I have found that the label generally is easily removed if it is removed as soon as the magazine is received. At least, this has held true for the last few issues. Are you using a different glue for the labels? A magazine mailed under cover would be even better, but you can't have everything.

Sincerely,

Terry R. Kroemer
Jacksonville FL

Alas, SF Adventure *just didn't get the proper distribution and we had to quit—I hope not forever. —And what do you think of the*

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suggestion on the index, George?

—Isaac Asimov

The reason that we run the index in the issue following the last issue covered in that index is that we simply do not have time to do a thorough job of preparing the index in the time between the December issue's contents are fixed and the time that the last of the material for the December issue goes to the printer. (And at that, we occasionally make errors in the index.)

—George H. Scithers

Dear Mr. Scithers:

There is nothing I like better than a good argument, and nothing will inspire me to action like the chance to give my opinions. An argument is what "On the Marching Morons" is and these are my feelings about it.

I was surprised to find myself agreeing with Mr. Niven. Perhaps this is because I am basically pessimistic in outlook and cannot take Dr. Asimov's optimistic views. I generally like Dr. Asimov and what he writes, and that usually means I agree with what the author is trying to say. However, in this case, I feel his view is clouded with sentimentality. It would be nice if *everyone* will do what is best. I do not believe that *everyone* can even agree on what is best, let alone agree on the way to bring it about. Needless to say, "making the world rich" is an incredibly pat solution to the problem. What I do believe, though, is that space is the answer. That is why I read science fiction: it gives me hope.

I like this kind of article and I hope you will print more of the same. I would also like to tell you that I like the amount of science fact you are printing. I, personally, do not appreciate it that much, though occasionally I like to read it. I realize, also, that SF had its beginnings in hard science and that it is still closely tied to scientific discoveries and their effects. I would be opposed to more than you are currently printing: *Isaac Asimov's Science Fiction Magazine* does not mean *Isaac Asimov's Science Fiction/Science Fact Magazine.*

In conclusion, I would like to compliment you; you are keeping *IA'sfm* one of the finest magazines I have ever read.

Sincerely,

T.K.F. Weisskopf
3601 Georgetta Dr.
Huntsville AL 35801

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Well, space will help, but while we're getting out there (which will take time) we have to solve the problem here on Earth.

—Isaac Asimov

Dear Mr. Scithers:

I read in your "Letters to the Editor" for your December, 1980, issue your advice to all writers that Strunk & White's *The Elements of Style* should be read frequently. I must say, I agree completely with your advice.

I would like to mention other sources where this same information may also be quickly obtained, if not in quite so much detail. How many people know what is in the back of a dictinary? In the "Back Matter" of the *Webster's Seventh New Collegiate Dictionary*, there is a section which deals on this subject entitled, "Handbook ofStyle." Should the reader wish to take the time, he will also find much other useful information in any good dictionary, including usually a vocabulary of rhymes, sources of words, and perhaps he will even be able to increase his working vocabulary.

Another good reference for a writer is the *Instant Dictionary* series published by Career Institute, Little Falls, New Jersey. There are presently, to the best of my knowledge, seven books in this series, covering everything from a very good spelling dictionary to a dictionary on synonyms and antonyms. I highly recommend it as a series of reference books for any writer, professional or otherwise.

I would also like to take this opportunity to commend you and your magazine's staff on the work they are doing with upcoming and new writers. I want you to know there is at least one of your reading public who recognizes the educational service all of you are performing to keep alive literary excellence alive in this age of mass electronical communications and instant gratification. Peit Hein said it better than I ever can:

There is one way to perfection,
No more, no less;
To err again and again,
But less and less.

Sincerely yours,

Toni Goss
Honolulu HI

Excellent! For some reason, some submitters grow peevish at having

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Strunk & White recommended. It's not an insult to do so. It's merely pointing out where one can get first-class tools. Thanks for the additional tools.

—Isaac Asimov

Dear Sirs and Madame:

Jo Clayton, author of "Companioning" which was printed in your December 1980 issue, has a fetish. There were at least seven instances in which her characters crossed/folded/hugged their arms/knees across/over/below/against their breasts. This was obnoxiously repetitous and distracting, and detracted from a story I would have enjoyed otherwise. I'm not against breasts, you understand; I just object to being beaten over the head with them.

Did you print the story merely because it was a continuation of the Gleia series? It couldn't have been selected for its great style. Perhaps the repetitive imagery was to symbolize Gleia's sexual awakening and budding maturity. If so, it seems she has as many buds as a brussels sprout plant. I hope Clayton does better next time; I have enjoyed her stories in the past.

Aloha no,

Andrea Gill Beck
Hilo HI

The New Yorker *occasionally has an "infatuated with the sound of one's own words" department where examples of this sort of thing are given. Even the most experienced writers sometimes fall prey to it. Seven in forty pages is tolerable, however. I once had seven "he said icily/frostily/coldly" in two pages.*

—Isaac Asimov

Dear Earthlings,

We have some questions. First, what are the qualifications for a contributing writer to your magazine? Is there an age limit of any sort? Is experience required? Is it necessary to be a citizen of this particular planet? We would appreciate it if you would send your story needs and a manuscript format.

Secondly, how is the name "Asimov" pronounced? Of four beings who tried to pronounce it, there were four different pronounciations. This could lead to much confusion and possible world disorder. Besides that, we have five bucks riding on this. So in the interest of

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world order and five dollars, please give us a clue as to how to say "Asimov."

Many thanks,

Brad & Brian Jensen
Northville, MI

Say "has," say "him," say "of." Say "has-him-of." Accent the first word. Leave out the h's. You 've got it. "As-im-of"—"Asimov." And remember the "v" sounds like a "v."

—Isaac Asimov

Dear George:

Last summer when I saw you at WesterCon I meant to discuss a matter with you, but every time I saw you I forgot to mention it. Since then I have moved five times and generally lived in some disarray; I meant to write this long ago.

The subject is the editorial introduction to my collaboration with Ted Reynolds, "Alien Lover," in the June 1980 issue. The galleys mentioned, in the introduction, that I was "a soon-to-be Ph.D." Since I had received my degree some weeks before, Ted and I changed the relevant sentence to reflect my new status in the past tense. However, when the story was published, the original introduction was used. This fact about my degree is a minor point, but I wanted to ask why the first introduction was used after we had changed it to make it more accurate. I'm very particular about such matters.

I have several unrelated comments, also. In the letter column of November 1980 you mentioned that "William Wu is Chinese." I was honored by your mentioning me, but wanted to make another point. I am a Chinese American, not Chinese; and while this is a minor point to most people, I would prefer that the distinction be made. Again, this is a question of accuracy.

Lest these points of accuracy become tiresome, I have another point that has nothing to do with accuracy. I prefer to be identified either by my casual name, Bill Wu, or else by my full by-line, William F. Wu, complete with middle initial. Those are the names I actually go by.

"Isolated Events," by John Stallings, and "The Chinese Dragons," by F. Gwynplaine MacIntyre, prompt me to one final suggestion. A number of formal systems have been used for many years to anglicize Chinese names and terms. The Wade-Giles system is the most widely used and familiar; the Pinyin system of modern China is in current

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journalistic use. These and others, such as the Yale system, can be researched through any textbooks for beginning the study of Chinese. I suggest them because over the years some of your authors have either mixed the systems, used them with mistakes, or partially made up their own. MacIntyre, for instance, uses the Wade-Giles system for the basis of his spellings, though "t'zu" is either a writing mistake or a typographical error; the aspirative symbol only appears after the "z" in that system, and not at all in the nominalizing suffix. Stallings uses the old Legge system in his spelling of LiSuu, but the name should be divided into two words according to the rules of that system. By contrast, Brian Aldiss correctly and consistently uses the Wade-Giles system. E. Hoffman Price's use of anglicized Chinese is more varied and complex, but he has the familiarity with his subject necessary to support such use.

Many Chinese dialects do not have formal systems of anglicization, and authors dealing with those dialects in English obviously have some latitude. However, when authors are obviously anglicizing the Mandarin dialect, they have a number of recognized systems from which to choose. I suggest that your staff impose some standards on such use; after all, if authors wish to make up names and words in science fiction, they have all the universe to play with. I'm not the only reader or writer of SF to have some familiarity with these systems, and careless or uninformed use of them can lose my trust as quickly as a black hole in the back yard or a spaceship with roll-down windows. For an analogy I might point out that words and names from European languages other than English all have specific spellings that are considered correct, even when the alphabets involved do not correspond exactly. This avoids the problems of Renaissance Italians named Duh Vinchey or writers named Azzimoff—no disrespect, please understand, intended.

Thanks for your time.

Cheers,

William F. Wu
Los Angeles CA

As to the Ph.D. imbroglio, the fault is ours. We forgot and we apologize. As to identifying you as Chinese—that was short for "of Chinese heritage" for the question was whether anyone other than "Caucasians" wrote SF. And as for the information on Chinese names that is invaluable, for anyone trying to use them. Thank you.

—Isaac Asimov

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Dear Mr. Scithers,

The January, 1981 issue arrived day before yesterday; and even in the last-minute holiday rush I feel that I must write to say what an exceptional issue it is. Four items alone would have made this issue outstanding, no matter what else had been included: John M. Ford's "1952 Monon Freightyard Blues," "Island Man," the index, and the sparring between Niven and Asimov. Heaven forfend I should ever disagree with either of them in a public place!

If you pass messages on to authors, I would ask Mike Ford if we are to know that this is an alternate universe because Greencastle, Indiana, has been built on the wrong side of Indianapolis—or did he intend Greenfield all along? And if R.A. Wilson is stroking stray cats instead of typewriter keys, please instruct him to get back to work. The theme of "Island Man" is old in science fiction, but interesting still. However, perhaps someone should protest the number and density of Wilson's comparisons. A few months ago I objected strongly enough to write Dr. Asimov a very nasty letter when he took up the issue of arty writing versus plain stuff. Fortunately, I thought better of disagreeing with him and tossed the letter into the stack of ideas I had in the longer hours of the night. I think Asimov is putting on the garb of a common man of plain speech for some purpose of his own. He certainly has written the occasional "stained-glass window" himself, and has done it well. His point is well taken, however, and should be well taken by all young writers, especially those who are still under the influence of their teachers. I myself teach, and yet I am appalled by the examples of so-called vivid expressions promoted by my profession in textbooks and lectures. Asimov is right: the story is the thing, and the writing should clarify it, not obscure it. A few well-chosen figures of speech help the reader to feel that he is inside the writer's universe; a dozen in a page become objects of wonder in themselves, and cloud the clear glass plate of Dr. Asimov's metaphor.

Distribution of *IA'sfm* is quite satisfactory here in Maine. Only once (in July) have I needed to go to Canada to buy my copy, and that prompted me to subscribe, so all was not lost. My mother found the very first issue at her local Publix supermarket in Bradenton, Florida; sent it to me in Maine and to my brother in Las Vegas; and hasn't seen a copy since then. Retirement income not withstanding, she would be a purchaser if she could find you. Perhaps your Sarasota area distributor could use a hint.

Finally, please do not print less fiction in favor of nonfiction. Although I enjoy science fact/opinion, if that was what I principally

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wanted, I'd buy *Discovery* or *Quest*. You print science fiction that is original and distinctive; please continue to do what you already do so well.

Yours very truly,

Kathleen Lynch
(Mrs. G. Ernest Lynch, III)
Temple ME

When *did I write a stained-glass window?* Never!

—Isaac Asimov

Dear Dr. Asimov,

I am fifteen years old, and while I usually don't write letters to magazines, I feel that yours is special. You maintain a very high standard of literature in your magazine and it is obvious that you don't have that "If it fits we print it" attitude.

I am quite interested in science fiction and have avidly read all the great authors (yes—especially you, Dr. Asimov). I find *IA'sfm* refreshing and delightful every month. I like your policy of encouraging budding young authors and because of this fabulous policy I am hereby requesting your famous SASE (say-zee) so that I may receive your manuscript needs, etc. By the way, what is the age of the youngest submitter who was accepted by your magazine?

Thank you very much for your wonderful publication.

Laura A. Levy

Actually, we think the youngest acceptee was fifteen, but age doesn't matter. If your story is good, we'd take it if you were 97.

—Isaac Asimov

NEXT ISSUE

The August 31, 1981 issue of *IA'sfm* will contain so much work by so many Big Name Writers that we won't have room to mention all of them here. However, we'll give you a sample: John Brunner, Algis Budrys, G. C. Edmondson, Ted Reynolds, J. O. Jeppson, and, for the cover story, Somtow Sucharitkul with "Mallworld Graffiti." The Good Doctor offers his usual informative editorial, and Baird Searles reviews the current crop of SF books. On sale August 4, 1981.

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